Commissioner's Report

Results of the Public Review

On the Effects of Potential Oil and Gas Exploration Offshore Cape Breton

March 29, 2002

103-03411/

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Dear Mr. Dhaliwal, Mr. Balser, Mr. Dickey:

I am pleased to submit this report of the Public Review on the effects of potential oil and gas exploration and drilling activities within exploration licences 2364, 2365 and 2368. As Commissioner for the Review, I have followed the Terms of Reference requirement to pay particular attention to the socio-economic impacts, effects on the ecosystem, and to mitigation of impacts. I have been mindful of your admonition to ensure that the general public and all interested parties had full opportunity to participate in the process. Also, in keeping with your direction, the Commission's secretariat created a library of scientific and technical studies and other reports and documents for use by the general public and interested parties as reference material for their submissions.

Participation in the Review process was strong and reflected a broad range of interests. Some participants expressed frustration with the Review's limitation to the Exploration phase. This was especially true for those who wanted to attend to socio-economic impacts. Their views were also heard, and are summarized without comment in the report.

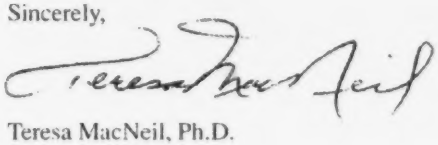
The Terms of Reference did not require me to make recommendations. Consequently, I gave principal attention in this report to summarizing the views of participants and, later, to presenting my conclusions.

It has been a privilege to serve as Commissioner for this Review. I have enjoyed hearing each of the participants' views and regret that the limits of a report do not permit me to refer to each of them. I was very impressed by the quality of attention paid to the preparation and presentation of their respective positions. A record of all written submissions and of each day's presentations will be available to the public through the Beaton Institute of the University College of Cape Breton.

I want to express particular gratitude to my small group of colleagues who so thoroughly supported the Commission's work: Joan McInnis, Executive Assistant, for her professionalism and unrelenting attention to detail: Edward Carey, P.Eng.; Technical Coordinator, for his work in identifying and gaining access to scientific and technical expertise and resource materials: and to Dr. Robert Bailey, Senior Advisor, for his quiet, systematic and wise advice, and for his incisive approach to each aspect of the process.

Finally, as a conclusion of my experience with this Review, I see the need for the Canada Nova Scotia Offshore Petroleum Board to move along with the next step of its regulatory process in relation to the proposals of Hunt Oil and Corridor Resources. My report includes suggestions for making that process more responsive to the concerns of the public. It is my view that with attention to what science and experience have shown, along with the findings of this Review, and the collaborative advice of informed interest group representatives, you will have a solid base for deciding whether the proposed activities should proceed.

Sincerely,



Teresa MacNeil, Ph.D.
Commissioner

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EXECUTIVE SUMMARY

On February 6, 2001, the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) appointed Teresa MacNeil (see last page in report) as a one-person Commissioner to conduct a public review of the effects of potential offshore oil and gas exploration and drilling activities in Sydney Bight and southern Gulf of St. Lawrence regions where Hunt Oil Company of Canada and Corridor Resources Inc. proposed to conduct seismic surveys.

The Inquiry was to hear public views on those proposals and examine the assumptions behind those views. The Terms of Reference (see Appendix I) required the Commissioner to prepare a summary of the public concerns and to prepare findings on the probable socio-economic and ecosystem effects of these activities. But it was not part of the mandate of the Commissioner to advise on whether the exploratory programs proposed by Corridor and Hunt should proceed. Nor was it within the Commissioner's mandate to recommend whether a moratorium should be placed on exploration of the Licence areas and their surrounding environments. And she wasn't to conduct a scientific inquiry into the merits of the proposals or deal with any other matter "beyond consideration of the effects of potential oil and gas exploration and drilling activities within the licence areas."

The Inquiry was conducted in two phases: first, a series of public meetings to allow groups and individuals to identify concerns and exchange views about the process, and, 2) a series of public hearings to hear submissions from interested parties.

During 15 days of well-attended hearings between January 10, 2002, and February 1, 2002, the Inquiry received 130 formal submissions from the affected companies, the petroleum industry, commercial fishery interests, environmental groups, business organizations, aboriginal leaders, the tourism industry, the building trades, education institutions, government departments, politicians and ordinary citizens.

The process itself was useful and instructive, Commissioner MacNeil said, because of the subtle but noticeable "shift in viewpoints" that occurred during the hearings. Despite their differences, she noted "an increasing openness to hear, understand and sometimes acknowledge merit in a competing argument from other participants" during the hearings.

As a result of what she found during the public hearings, the Commissioner reached a number of conclusions, offered "advice" on several areas beyond her Terms of Reference and made two recommendations.

Conclusions:

- *There is need for expert examination of the science and experience that is at the root of the remaining uncertainty.*
- *The proponents need to update their exploration plan, with particular emphasis on addressing some of the uncertainty which underlies the issues including steps and means to resolve them.*
- *In light of issues raised during the Public Review, the CNSOPB should pay particular attention to:*
    - *The fact that commercially important fisheries, such as snow crab, or fisheries in which the stocks are nearly depleted, are based in close proximity to the proposed exploratory programs.*
    - *The fact that munitions dumps are located within some of the licence areas. The CNSOPB should request a full report of their characteristics from the Department of National Defense in order to evaluate their potential impacts.*
- *The strongly motivated participants having developed a high level of understanding of the issues during the Review process constitutes an important consultative resource for the next stage of the regulatory process.*

- *The Ministers now have a responsibility to take advantage of gains made by the various interest groups as a result of the investment those groups made in the Review process.*
- *On the basis of participants' interventions during the hearings, enhanced relationships among interest groups such as the fishing and petroleum industries, the building trades, environmental groups, all levels of government, and business interests can champion a range of specific matters which require particular attention, whether through investigation, coordination, co-operation or regulation.*
- *The southern Gulf and Sydney Bight areas should be treated as one for impact assessment purposes. Any assessment of potential effects of exploratory activity in either area should take into consideration potential effects, if any, in the other area.*
- *Mechanisms such as Marine Protected Areas and Integrated Management Plans should not detract from the requirement for planning to be problem-centered, and for the method of problem solving to be rooted in an analytical process and not in preconceived ideas.*

Advice:

- *The Commissioner advises government agencies, particularly the CNSOPB, to establish effective arrangements to keep fishery interests informed, particularly about impending actions associated with rights issuance.*
- *The Commissioner advises early and full consultation by the Crown, as well as the private developers, to pursue the implications of aboriginal title with the Mi'kmaq.*

Recommendations:

- *that the necessary scientific, technical and experiential resources be convened to assess the existing base of knowledge in relation to the EPO review, the Hunt and Corridor proposals, and the Public Review Commission's Findings.*
- *that the Ministers and the CNSOPB broaden the consultative system to apply to the next stage of the decision-making process for the three Licence Areas, to include a cross-section of interests for the purpose of gaining advice about whether or not the proposed activities should proceed, and the specific measures to be taken in the event their decision is to proceed with exploration and drilling activities.*

FIGURE 1
APPROXIMATE LOCATION OF
OFFSHORE LICENCES 2364, 2365 & 2368
AND SFA FISHING MANAGEMENT AREAS
PUBLIC REVIEW COMMISSION

INTRODUCTION

BACKGROUND

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education away from the intensity of the hearings, people with opposing views often ended up talking to one another. I will not pretend that this resulted in new alliances. The unemployed construction worker did not abandon his determination to seize the opportunity to benefit from a resource beneath the sea in favour of protecting crab fishing grounds. And the fisherman remained convinced the known value of the fishery, which has provided their livelihood for hundreds of years, should not be sacrificed to the uncertain value of gas and oil, with a lifetime of only a couple of decades. Nor did representatives of the gas and oil companies alter to postpone their proposed exploration activity until more research could be conducted, as some were demanding.

The shift was more subtle than that, but no less significant. I noticed gradual adjustments in seating arrangements, for example. A group of construction workers, who had occupied a block of seats at the back of the room each day for several days, moved one morning to seats beside fishermen, environmentalists and oil company representatives. Through their questions and comments, they also made clear that their wish to understand was nearly as strong as their desire to be understood. That was not uncommon. I noted an increasing openness to hear, understand and sometimes acknowledge merit in a competing argument from other participants as well. Participants increasingly exchanged jovial remarks and I even noticed representatives of competing interests having lunch together.

To give you a sense of the impact of all of this, just consider some of the summary statements people made during the final day of hearings:

- "Anyone having attended these hearings can not go away from here without acknowledging how our social and economic lives are integrated, or they have not been listening."
- "This public hearing process has provided for a gathering of a rather diverse group of people, on all sides of the issue, who I believe have come to have a more sincere understanding of the 'other person's' reasons for being here."
- "With enough time, I think we could have developed consensus here if we could have been locked in a room for another month."

Consensus was not the objective of the public hearings, of course. But those who will make the final decision about whether to proceed with exploration would do well to recognize that the various interest groups and individuals involved in this process are disposed and willing to work out their differences together. They want to be part of the process. I will deal with this in more detail in my Conclusions and Recommendations section.

THE REPORT

What follows is both a report on my findings during the public hearing process and also my own findings and recommendations.

While not reflecting every view presented, I have attempted to represent the essence of the proceedings in this report, which includes a summary of the views of the general public and interested parties.

Many of the issues discussed fell outside my mandate but seemed inextricably linked to the substance of the issues that did fall within my purview. In particular, these include issues related to the constitutional concerns of the First Nations, the legislative and administrative concerns of the fishing industry, environmental and other participants, and the socio-economic and environmental matters linked with development and production, which were a concern, one way or another, of virtually all of the participants. Because these issues are germane to the subject of the Review even if not specifically within my mandate, I believe I would misrepresent much of proceedings of the hearings if I failed to report on them.

THE CONTEXT

One of my principal responsibilities was to prepare a "summary of the views of the general public and interested parties." This is that summary, focusing on the issues as seen by participants at the hearings in Wagmatcook and Montague.

It is no easy task to synthesize, or even encapsulate, all the views of all of the groups and individuals who participated in this Public Review process. While there were significant areas of agreement on such general issues as the need to protect the fishery, for example, there was no such common ground on the specifics of how that should best be achieved. And the devil, of course, is in these details.

I will begin with an explanation of the Hunt and Corridor proposals, as the companies outlined them to me, followed by a section on the state of the marine habitat, mammal and [illegible] bird populations of the area, as detailed by Fisheries and Oceans Canada and many others, and a third section on the current economy of the region from a number of sources.

These will provide readers with some context for the discussion to follow.

THE COMPANIES' PROPOSALS

Seismic Surveys

Corridor and Hunt have proposed conducting 2D seismic surveys in their licence areas as the first step in identifying geological structures which may contain gas or oil.

Although the precise details cannot be confirmed until it selects a contractor, Hunt said its proposed survey in the Sydney Bight will use modern seismic methods and technology.[1] It expects to conduct its survey during late autumn or early winter specifically to avoid interfering with fishing activity during the spring, summer and early fall, and also to mitigate potential negative interactions with sensitive biological attributes of the marine environment. The timing, of course, will also help the company avoid winter conditions when heavier sea states, which generate noise adversely affecting seismic data collection, decrease the amount of time available for surveys.

Corridor proposed a less extensive survey than Hunt on its lease in the southern Gulf of St. Lawrence. It plans to use the smallest airgun array practical for achieving its geophysical objectives.[2] The survey would last approximately five days during October or November.

Both Hunt and Corridor describe the socio-economic benefits associated with seismic operations as "modest." The surveys will be short term. The vessels and crews contracted to do the work will likely be

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[1] A seismic vessel will tow an array of 30 to 40 airguns approximately 6 m below the water surface, and a hydrophone streamer, the length of which is predicted to be 4,500 to 6,000 m. The vessel speed during the survey will be no less than 3.5 knots and no more than 5.5 knots. The airgun array will operate at acoustic intensity levels typical for current seismic operations in the offshore area of Nova Scotia. The airguns will discharge approximately every 12 seconds and will be arranged in such a manner that, to the extent possible, the energy is directed downwards towards the seafloor. Hunt plans to run 31 survey lines totalling 2,093 km in length. The length of each line will vary. Some may be as short as 20 km and others may exceed 190 km. All lines will be located 6 km or more beyond the shoreline. These lines will take about 20 days to complete. This estimate does not include down time associated with weather conditions or other unforeseen circumstances.

[2] The array would consist of 15 to 20 individual airguns and operate at acoustic intensity levels approximately one-third to one-half the value used on the Scotian Shelf. The hydrophone streamer with a length of approximately 4,000 m would be shorter than the streamers commonly used on the Scotian Shelf. The survey would consist of 26 lines, totalling 685 km, towards the western edge of its licence area. All lines would be more than 15 km from the Cape Breton shoreline and 22 km from the PEI shoreline.

from outside the country, although some deck hands may be hired locally and some provisions may be acquired from regional ports. Corridor has indicated it would hire one or two fishery observers to monitor its seismic program for any effects that it may have on the fishery.

Exploratory Drilling

Both Corridor and Hunt say exploratory drilling would only be carried out if their seismic surveys identified geological structures capable of trapping oil and gas. Drilling, they noted, is the only way to confirm the presence and nature of hydrocarbons in such structures.

Both companies have also indicated they would likely use jack-up drilling rigs if they were to carry out exploratory drilling. These rigs require by regulation a 500 m exclusion zone around them to protect both the rig and marine vessels. If the surveys identify oil and gas prospects in waters deeper than 80 m, the companies indicated they might use semi-submersible rigs. Because semi-submersible rigs require the temporary installation of an array of six to ten anchors, they would require an even larger exclusion zone.

Prior to drilling , the companies would conduct surveys of the sea bottom around where the drilling rig would be located to ensure it was clear of debris, the substrate would support the rig legs and there were no shallow gas deposits near the surface of the ocean floor that might pose a hazard to drilling.

They would use water-based drilling muds. Such muds contain a variety of non-toxic components, the major ones being bentonite and barite. Although muds are normally discharged into the marine environment without treatment, Corridor said it would be prepared to bring all muds ashore for disposal if an environmental assessment of its proposed drill site provided evidence discharges of this nature would cause harm to the local environment.

The drilling rigs would be equipped with blowout preventers to control the flow of gas or fluids from the well. Corridor and Hunt acknowledged blowouts represent a distinct though, they insist, small risk. Corridor suggested the probability of an oil spill in excess of 10,000 barrels is one in every 6,700 wells, and the probability of a spill in excess of 150,000 barrels is one in every 20,000 wells. Hunt, in its submission, compared offshore oil exploration and development, which contributes approximately 1.5 percent of the total hydrocarbon input into the world's oceans, with the marine transport industry, contributing about 45 percent.

Corridor and Hunt stated that all drilling rigs contain waste management systems designed to prevent discharges of wastes or on-board spills into the marine environment. These systems control such wastes as grey and black water, ballast and bilge water, deck drainage, discharges from machinery spaces, garbage and cooling water.

Corridor estimated it would need approximately 40 days to drill a well to 3,000 m and to evaluate its oil and gas potential. Such an exploratory well would probably be drilled in the fall but a final decision would be based on discussions with the fishing community. Hunt calculated that drilling and evaluation on its lease could take anywhere from 50 to 140 days. These activities would be timed to avoid causing potential adverse effects on fish populations and to avoid interfering with the fishery. Activities would not be conducted on any of the licence areas during the winter months because of ice conditions.

Drilling rigs would be serviced by supply vessels. Hunt indicated these vessels would make an average of three trips a week to the rig. It would also maintain one stand-by vessel on a 24 hour basis. Helicopters may be used periodically to fly personnel to the rig and effect crew changes.

THE MARINE HABITAT

In an effort to assist the public and me in the Review, the Department of Fisheries and Oceans (DFO) in the Maritimes, Gulf and Laurentian Regions prepared a comprehensive document outlining its current

state of knowledge, including the identification of knowledge gaps about the marine environment in the southern Gulf of St. Lawrence and Sydney Bight. This information is contained in its Habitat Status Report.

In it, the DFO describes the marine habitats in the southern Gulf of St. Lawrence and Sydney Bight areas in which Corridor and Hunt propose to explore as "... two biologically sensitive areas," which are closely linked, biologically diverse and contain sensitive life stages of marine organisms throughout all seasons of the year.

The southern Gulf is a shallow, semi-enclosed region with seasonal ice coverage that features a counter-clockwise flow which is subject to alterations by the actions of wind and tide. The semi-enclosed basin morphology combined with tidal action facilitates the movement of deeper water, rich in nutrients, to the surface layers of the water column. The Cape Breton Trough links the southern Gulf and the Sydney Bight regions.

The southern Gulf of St. Lawrence supports spawning , nursery and feeding activities for a variety of important fish stocks. Approximately 500,000 tons of mackerel spawn in the Gulf each year. In recent years, the biomass of mature age classes of herring stocks has been estimated at more than 450,000 tons. Although many fish stocks are depressed, recent studies suggest densities of groundfish in the Gulf — such as American cod, American plaice, white hake, and winter, witch, and yellowtail flounder — are "among the highest in Atlantic Canada." Diadromous fish, the most important of which are Atlantic salmon, gaspereau, striped bass and smelt, are also found in the southern Gulf of St. Lawrence area.

DFO estimates that up to one million tonnes of mature marine fish may migrate along the west coast of Cape Breton between the spawning and feeding grounds of the Gulf of St. Lawrence to wintering grounds outside the Gulf. Stocks using this route, which was described by several participants in the hearings as a "narrow corridor," include mackerel, herring, tuna, cod, plaice, white hake and witch flounder, and several species of diadromous fish.

The water depths in the Sydney Bight region range from 50 m to 120 m. The slope to the Laurentian Channel is steep with water depths increasing to about 400 m. The sea bottom is characteristic of the shallow Scotian Shelf region, which stretches to the southwest along the Atlantic coastline. Ice is present from 60 to 100 days of the year.

The DFO states in its report that the physical environment of Sydney Bight area provides diverse habitat conditions for breeding and feeding as well as over-wintering. The deeper waters adjacent to the Laurentian Channel favour over-wintering habitat for adult herring and most groundfish stocks while the shallower waters are feeding and breeding areas for cod and other species. According to information provided by the DFO, several species of diadromous fish, as well as marine fish, use Sydney Bight as a migratory route into and out of the Bras d'Or lakes.

Invertebrates support important fisheries in the southern Gulf of St. Lawrence and Sydney Bight. The DFO economic records show that lobster and snow crab are the basis for major regional fisheries. Rock crab, sea scallop and sea urchins support smaller fisheries, and DFO has suggested that toad crab, stone crab and shrimp have "commercial potential."

Lobsters frequent inshore environments in the southern Gulf of St. Lawrence and Sydney Bight. The DFO research indicates the production of lobster larvae in the southern Gulf of St. Lawrence is among the highest per unit of surface area of any region in North America. Snow crab are found in mid-shore environments. Its studies indicate that the southern Gulf of St. Lawrence and the Sydney Bight are settling areas for snow crab larvae and are occupied by all benthic phases and size groups of snow crabs.

The DFO notes in its Habitat Status Report that a large seasonal variation in planktonic biomass, up to "five-fold" in summer, is characteristic of the southern Gulf of St. Lawrence. Moreover, it notes, the biomass of zooplankton is much higher during the period from April to September than elsewhere in

the Gulf or the St. Lawrence Estuary. Much of that biomass is made up of a wide variety of larval and immature fishes and invertebrates. Information on the communities of zooplankton in the Sydney Bight is not as complete as that for the southern Gulf of St. Lawrence.

The DFO describes the southern Gulf of St. Lawrence as one of Canada's most productive marine areas; it represents less that one percent of Canada's exclusive maritime zone but accounts for 15 percent of its total commercial catch. Information provided to me by the DFO indicates that the southern Gulf of St. Lawrence supports 12,234 fishers operating under the authority of 28,596 licences and 9,000 fish processing workers at 145 plants. This level of activity, it notes, is an important component of the economic base of local communities located adjacent to the Gulf of St. Lawrence.

The DFO identified lobster and snow crab as the principal commercial species harvested in the southern Gulf of St. Lawrence region. Data from the DFO Gulf management region in 2000 indicate that lobster and snow crab account for 52 percent and 25 percent of the total landed value respectively. Other mulluscs and crustaceans account for 14 percent of the landed value while pelagic, estuarial and groundfish account for the remaining nine percent.

The DFO estimates, from data collected in the 4Vn management area (Figure 1) which encompasses the Sydney Bight, that the total landed value for all species there in 2000 was $27,720,000. Shellfish accounted for over 90 percent of this total. Groundfish and pelagic and estuarial fisheries accounted for most of the remainder.

MARINE MAMMALS AND BIRDS

The DFO has identified at least 15 species of cetaceans that occur in, or pass through, the Cabot Strait. Six of these — the fin, minke, humpback, and pilot whales, the white-sided dolphins and the harbour porpoise — are regular visitors. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) lists the fin and humpback as being of "special concern." The DFO considers the Cape Breton Trough to be an important feeding area for whales, but it notes it does not have a good understanding of many of the behavioural and biological attributes of this group of animals such as seasonal activities, species and abundance.

In addition to the species identified by the DFO, Corridor lists the blue whale — another species designated to be of "special concern" — as a regular visitor, and the beluga and bottlenose whales and the white-beaked dolphin as occasional visitors to the area. It also indicates that the right whale, which COSEWIC has labelled "endangered," may on rare occasions be found in the southern Gulf of St. Lawrence. According to Hunt, many of the same species of cetaceans are found in Sydney Bight.

The DFO identified four species of seals commonly found in the southern Gulf of St. Lawrence; two permanent residents, the grey and harbour, and two seasonal residents, the harp and hooded seals. According to Corridor, the harp seals migrate to the southern Gulf of St. Lawrence from the arctic in December. The hooded seals also spend the winter months in the southern Gulf of St. Lawrence and are associated with the ice cover. In the Sydney Bight, Hunt has identified five species of seals: the grey, harp, hooded, harbour and ringed seals. Hunt indicated that all, except the grey seal, are occasional visitors. Grey seals are the only permanent residents in the study area where they have a breeding colony on Hay Island.

Corridor has identified three species of sea turtles that are found in Atlantic Canada. A few leatherback turtles have been reported in the Gulf of St. Lawrence during the summer season. Loggerhead turtles may be found in the Gulf but their status in this region is not known. Kemp's Ridley turtle has been found in Canadian waters but Corridor concluded its presence in the Gulf may be problematic. These three species are listed by COSEWIC as "threatened" or "endangered." Hunt cited evidence that leatherback turtles occur in the Sydney Bight from June to mid-November, after which they may move into deeper water before migrating into subtropical or tropical waters.

Environment Canada provided information showing that coastlines in the licence areas provide important habitat for many species of seabirds throughout the year. It noted that several tracts of coastal lands, including Bird Islands, Ingonish Island and the Margaree Island National Wildlife Area, located near or within the licence areas, are recognized as particularly significant for bird life. The Department identified the important breeding colonies for a number of seabirds, including the Atlantic Puffin, Razorbill, Black Guillemot and Leaches Storm Petrel. In addition, it identified a variety of non-breeding species which use this general area, depending on species, throughout the year.

According to the information provided by Corridor, the waters off western Cape Breton Island support low densities of coastal and pelagic seabirds relative to many other coastal regions of Atlantic Canada. Colonies of cormorants, large gulls and terns dominate the seabird colonies of coastal Cape Breton Island with Margaree Island and The Capes having the largest colonies. Information provided by Hunt suggests the coastal area on the east side of Cape Breton supports higher densities of coastal and pelagic seabirds than the western side. Hunt identified five important breeding and resting sites in its study area. Nesting occurs on Bird Islands, Green Island and Port Morien between March and October. Sites at Ingonish and Louisbourg are important resting areas for migrating seabirds.

THE ECONOMIC SETTING

While acknowledging the central role of the fishery to the economy and social well-being of many coastal communities in New Brunswick, Prince Edward Island and Nova Scotia, many participants in the Review from northeastern Nova Scotia expressed the opinion that exploration represented an opportunity to diversify and strengthen the economy of the region.

No comprehensive summary was available describing the current status of industry, trades and business in the province's eight eastern counties where there is high interest in the proposed gas and oil exploration activity. However, a number of presentations provided an overview of some of these attributes.

Hunt cites a study conducted by Gardner Pinfold, in March 1999, which identified weaknesses in most socio-economic indicators in Cape Breton. These included: "consistent decrease in employment opportunities;" "a relatively low and declining participation rate;" "an unofficial unemployment rate double the provincial average;" "a relatively low earned income;" and "a declining population."

Keith Brown, from the University College of Cape Breton provided information to illustrate that the Cape Breton Region had the country's highest rate of unemployment, at 17.7 percent in 2001, and that it has a per capita income below the provincial average. His evidence indicates there has been "substantial improvement in both employment and participation rates in Cape Breton in the past five years and most notably during 2001, even in the face of the closure of coal mining and steel production." However, he observed that the regional economy remains fragile and needs "a new economic engine" to put it on firmer ground. Exploration, he concluded, represents an opportunity to assess the potential of an oil and gas based industry to fulfill this need.

A prevalent theme of the presentations from business and trades interests was the importance of providing opportunity for young people to remain in or return to the region in order to stop the current population decline with its negative implications for families, communities and social and educational institutions of various kinds. Many made reference to the regrettable fact that, due to negative economic circumstances, most parents cannot look forward to having their children and grandchildren living nearby.

IMPACT ASSESSMENTS

Hunt and Corridor provided the Review with their assessments of the potential environmental and socio-economic effects of seismic activities on their licence areas. The documents focused on the effects of seismic activities on fish and invertebrates, marine mammals and birds, the fishery and the regional economy as well as the potential for cumulative effects, and on ways and means of mitigating adverse effects. Hunt also identified the location of military ocean dumpsites, which may pose a hazard to exploratory activities.

In general, both companies concluded seismic activity would have no significant effect on the marine environment and its uses, and that the socio-economic benefits to Cape Breton would be small.

Hunt's study was based on an autumn survey and focused on an area, including all of Sydney Bight bounded by Cape North in northeastern Cape Breton, Scaterie Island in the east, and the Laurentian Channel to the northeast. Hunt contended the likelihood of any environmental impacts on marine life , including commercial fish and invertebrates, eggs and larvae, marine mammals, and birds, at the population level was low and that the magnitude of any impacts which might occur would be minor (less than one percent of the population of any particular species) or negligible. Similarly, it contended the effects of seismic work on fishing activity would be minor to negligible (see Appendix VII).

Hunt identified two munition dumps, one containing unexploded bombs and the other containing 'explosives' of an unknown nature. The proposed survey will pass over the site containing unexploded bombs and approximately 18 km east-northeast of the site containing explosives.

Although the boundaries of the Corridor assessment were defined by the boundaries of its licence, it did take into account the effect of seismic noise disseminated beyond those boundaries. In general, it concluded the impacts on the behaviour of adult fish as well as fishing success rates for crab and lobsters, pelagic and demersal fish were likely to be minimum to moderate. And those impacts, it predicted, could be mitigated by conducting the surveys in the late fall or early winter when the fishery was less active, and when seismic activities were less likely to interfere with behavioural patterns important to the maintenance of commercial stocks. As a consequence, it estimated the residual impacts would be minor or negligible. While Corridor allowed that the likelihood of direct effects of seismic operations on crab and lobster in the benthic community is unknown, it concluded the magnitude would be minor to negligible. It argued that research on invertebrates has demonstrated they are invulnerable to lethal and sub-lethal effects of vibration and pressure changes although such effects could cause changes in behaviour. Effects on individual marine mammals were assessed to be likely but minor, and the effects on populations of marine mammals, seabirds and sea turtles negligible.

Corridor noted that over 80,000 km of seismic survey lines had been run and nine exploratory wells drilled in the Gulf of St. Lawrence over the past several decades with no apparent adverse effect on marine life or the fishery. Based on this experience alone, it believed its small program of 685 km of 2D seismic would not cause any significant effects.

Corridor and Hunt outlined the measures they were prepared to take, if necessary, to mitigate any potentially adverse effects from their operations. These included:

- pre-seismic studies of the affected areas;
- execution of surveys in the fall or early winter to minimize potential effects on sensitive life stages and interference with fishing;
- using "ramp-up" procedures to incrementally increase power to the air gun array over time thereby encouraging animals to leave the operating area prior to commencement of surveys;
- deployment of chase boats to encourage animals especially large mammals to leave the operating area;

- shutting seismic operations down when marine mammals are found to be within a predetermined zone around the seismic vessels;
- retaining trained biological observers on board the vessels;
- monitoring the effects of air guns on selected crab populations during and after the seismic program;
- consulting with fishermen and First Nations; and
- providing financial compensation for attributable damage.

In addition, Corridor noted it was planning to conduct a very short seismic program using relatively small, low-powered air guns compared with those used in conventional seismic surveys, which would further reduce the risk of adverse effects to the marine environment.

Both Hunt and Corridor concluded the impacts of their respective proposed programs would not contribute to any cumulative impacts. Fishing was identified as the only other significant activity affecting the marine environment during the general period when seismic operations are proposed. Each company concluded that the effects of its activities would not combine in any additive or synergistic way with the impacts of the fishery on the environment and therefore there would not be any cumulative effects.

Corridor did not provide any detailed assessment of the impact of exploratory drilling on the environment at this time. It noted that, in the event a potential oil and gas prospect was located as a result of its seismic study, the company would be required to prepare a detailed environmental assessment specific to its drilling proposal.

Hunt, for its part, did prepare a generic assessment of the potential environmental and socio-economic effects of exploratory drilling. It estimated the discharge of muds and cuttings would have a smothering effect on the benthic or sea-bottom community within an area covering a few hundred square metres under and adjacent to the drilling rig. It noted that, while there was no scientific information about the effects of muds and cuttings on snow crab, it had examined the research of the effects of these discharges on sea scallops and concluded the effects on snow crabs would be less because of their greater mobility and different method of feeding. With respect to lobsters, Hunt concluded there would be no impacts because they did not inhabit the areas in which exploration was planned. As a consequence, Hunt concluded that such discharges would have "minor, sub-local, medium-term impacts" on the benthic community.

As mentioned earlier, current regulations require a 500 m exclusion zone around a jack-up rig. Hunt predicted this zone would have a minor effect on the fishery generally but the impact could be significant for a few fishermen who rely on those particular sites for a large portion of their catch. Hunt has indicated it would seek to mitigate this effect through compensation.

Hunt stated that gray water and black water, generated on the drilling rig, is collected , treated and tested prior to discharge into the marine environment, meaning its impact would be negligible. Waste products which are discharged into the marine environment, Hunt notes, must be treated to meet regulatory requirements while other types of routinely generated wastes are usually collected and transported to shore for treatment. It concludes that the effects of the disposal of all wastes on the environment would be negligible.

Flaring, the practice of burning gas as part of the procedure for testing the hydrocarbon potential of exploratory wells, can attract birds and has been identified by Hunt as a possible hazard. However, it predicts that flaring during exploration will pose only a minimum risk not only because it happens infrequently but also because bird deaths resulting from this activity are rare.

Hunt also examined the potential impacts of lights, noise and disturbances to marine life, including birds, associated with the operation of the rigs and supply boats and found these effects to be negligible to minor.

If there were to be oil spills, Hunt anticipated the effects of crude oil would be greatest on birds that came in direct contact with the oil. Such exposure would reduce their ability to regulate their body temperature and adversely affect their buoyancy, leading to death. The effects on marine organisms such as eggs, larvae, fish, invertebrates and marine animals would be negligible or unlikely. Hunt noted that when sea turtles have been exposed to oil, it can cause temporary lesions in the skin. The company suggested there is some evidence indicating turtles have only a limited ability to detect and avoid oil.

It also examined the question of cumulative impacts of exploratory drilling on the marine environment and concluded that none were likely.

Hunt judged that, although there could be some important spinoff economic benefits, the overall benefits of a single exploratory well would likely be modest because there are few industries in Cape Breton which have the capability to conduct such work.

THE CONCERNS AND ISSUES

OVERARCHING CONCERNS AND ISSUES

For the most part, I will focus on the issues that dominated the proceedings. But participants also identified a range of other concerns that reflected their desire to be cautious either about damaging the environment and public health or foreclosing opportunities to stimulate the regional economy as a basis for enhancing the quality of life, including creating employment and social benefits.

These matters were often not controversial by themselves but suggested as factors decision-makers should consider when evaluating the Corridor and Hunt proposals. I have therefore included these matters in this section as well.

Protecting the Marine Environment

All participants, including those associated with the petroleum industry, the business community, the building trades and the municipalities agreed it was necessary to protect the vitally important marine environment in the licence areas.

However, there was little agreement about how to do this. Environmental and fishery groups and many individuals, for example, favoured a moratorium on exploratory activity in the Gulf of St. Lawrence and Sydney Bight at least until:

- research has been conducted to identify areas of high biological productivity, diversity and sensitivity,
- such areas have been protected through regulation or legislation, or
- new, more environmentally benign techniques are developed to explore for oil and gas.

The Conservation Council of New Brunswick argued for a temporary moratorium on exploratory activity while the DFO and the CNSOPB did the necessary research to better understand the potential impact of seismic activities and drilling in shallow water environments. In addition, the Council requested DFO take advantage of the proposed moratorium to assume its leadership role in identifying areas of high biological productivity or areas particularly sensitive to petroleum exploration and development.

In a similar vein others argued there should be no oil and gas exploration until the completion of a full environmental impact assessment involving all the stakeholders. Among those making that suggestion: the Chair of the Parliamentary Standing Committee on Fisheries and Oceans, Wayne Easter, and Nova Scotia New Democratic Party MLAs Howard Epstein and John Holm. The NDP noted that since the Hunt and Corridor inshore exploration licences were the first ever issued in Nova Scotia, the

federal and provincial governments had a particular obligation to undertake a full public review before allowing the companies to proceed.

Concern about the risk of damage to marine resources from exploration in shallow, near shore waters was a common theme, often closely related to suggestions of establishing marine protected areas. While the environmental community generally was not predisposed to entertaining any exploratory activity in the licence areas, representatives from some organizations did indicate they would be prepared to cooperate with other stakeholders to identify key sensitive areas where exploration should be prohibited. Those opposed to exploration also argued that most progressive western countries with offshore oil and gas prospects had either banned near shore exploration or had imposed rigorous legislative requirements for "opening up" such areas to exploration.

Those who favoured exploration rebutted these points with their own information including, for example, evidence that there has recently been near shore exploration in Canada at Bay St. George, Newfoundland. They also pointed out that, during the 1970s, numerous wells had been drilled off the shores of Cape Breton as part of an effort to evaluate coal deposits. Further, they argued that many of the locations where exploration was forbidden in other countries were areas that are not good prospects for oil and gas discovery and, in any case, were not set aside for environmental or fishery reasons.

For their part, representatives of the petroleum industry claimed they are, and have been, willing to work with the regulatory authorities and interest groups to help identify areas for protecting marine resources. Once identified and established, they said, industry would have clear direction on where it could and could not pursue exploration efforts.

Although the Corridor and Hunt licences are on different sides of Cape Breton, many participants argued the two areas are inextricably linked biologically. As noted in the DFO Habitat Status Report, fish from one area migrate annually to the other. The Maritime Fishermen's Union emphasized this interrelationship in its presentation, which noted that this was why "our fishermen on the Acadian Peninsula in New Brunswick, or the South Gaspé for that matter, have always had common cause with inshore fishermen in places like Little River or Dingwall or Big Bras d'Or or Glace Bay." Fishermen in Prince Edward Island echoed the same sentiment while expressing their dissatisfaction that the CNSOPB had used administrative and provincial boundaries to set the parameters of this Review rather than considering natural ecosystems.

Coexistence

Coexistence was another controversial theme throughout the hearings.

The fishing industry argued that coexistence is already in place; it has accepted offshore oil and gas exploration and development on the Scotian Shelf and has no major objections to such activities in the Laurentian Channel. In both these areas, the fishing industry has acknowledged that locations around drilling rigs and production platforms must be set aside exclusively for exploration and development.

But it argued the government and the oil and gas industry should be equally willing to accept that some areas need to be set aside exclusively to support the fishery. It insists that the biological resources in the licence areas are just too sensitive to place at risk from petroleum activities, and that fishing is too constrained either by natural or regulatory factors to permit exploration without adversely affecting it.

Furthermore, they argued that coexistence must be based on a relationship among equals. That means governments must put in place an effective legislated process involving all stakeholders to identify these areas. Some fishery groups, in fact, indicated they would not discuss the concept of coexistence until the current licences were revoked so both parties could re-start the process on an equal footing.

The petroleum industry, business community and construction industry favoured coexistence too but, generally, interpreted the concept differently. Using the same example as the fishery, they argued that current cooperation between the fishery and the petroleum industry on the Scotian Shelf

demonstrate coexistence can be successful. In general, it is their view that past experience in shallow water environments in other areas of the world, including the west coast of Newfoundland as well as the Gulf of St. Lawrence itself, demonstrated that exploratory activity does not represent any significant risk to the marine environment.

These groups also argued the oil and gas industry has demonstrated it has developed a range of procedures and technologies that effectively mitigate potentially adverse impacts on the marine environment and its resources.

Evidence presented at the hearings suggested that past efforts at consultation between the fishing community and the public, and the petroleum sector and its regulator, CNSOPB, had not been successful. Both Corridor and Hunt maintained they had made sincere and honest efforts to consult with representatives of the fishery but felt that their efforts had failed to engage fishers. The fishery and environmental groups, for their part, felt that government agencies, particularly the CNSOPB, had let them down by not establishing effective arrangements to keep them informed, particularly about impending actions associated with issuing exploration licences.

Even the meaning of the term "precautionary principle," a concept that formed an integral part of many arguments during the hearings, became a matter for debate. At one end of the spectrum, there were those who interpreted it to mean exploration and drilling activities should not proceed until there was absolute proof they would have no adverse effect on the marine environment. At the other end of the spectrum, were those who suggested there was no need to apply the concept because severity of the potential impacts did not meet certain administrative or legal criteria.

Many participants voiced public concern about the proposed exploratory activities in the current process for issuing exploration rights, which they perceived to exclude citizens who had a legitimate interest in the potential environmental and socioeconomic effects of such activities on other uses of marine resources. Although it was outside my terms of reference, the Gulf Nova Scotia Fisheries Advisory Board and the Management Board asked me to inform both levels of Government the rights issuance process must be "fixed." In particular, they requested that the process include fishermen before industry identifies offshore parcels and before the CNSOPB issues a Call for Bids. Other participating groups, including the First Nations with their unique interest in the proposed activities, made similar requests.

SPECIFIC CONCERNS AND ISSUES

Seismic Surveys

Fishery interests from northeastern Nova Scotia were well represented and participated actively throughout the Review, and particularly during the 16 days of hearings at the Waycobah Culture and Heritage Centre. In addition, fishery representatives from both New Brunswick and Prince Edward Island made contributions at the hearing in Montague, PEI. These organizations, as well as representatives from other groups and individuals opposed to seismic activity — including environmental groups, some members of the First Nations as well as individual participants — provided arguments to refute many of the findings in the companies' environmental and socio-economic assessments.

Perhaps most significantly they claimed there simply is not sufficient scientific information available — either generally or more critically for the southern Gulf of St. Lawrence and Sydney Bight specifically — to make accurate assessments about the potential environmental and consequent socio-economic effects.

These two areas, they note, are biologically productive and diverse and contain many species of fish and invertebrates that support a variety of successful inshore fishing industries. They provide important spawning grounds, nurseries, feeding areas, migratory routes and over-wintering grounds. Neither the life cycles of these commercially important species nor the attributes of the non-commercial biomass, which represents an important part of the food chain, are sufficiently well understood to provide a basis for proceeding with seismic exploration.

In addition, they point out that sensitive life stages and/or behavioural patterns essential to the health of fish and invertebrate populations occur during almost all seasons of the year. Consequently, representatives of the fisheries and other stakeholders have suggested that there is no window of opportunity for conducting seismic exploration activities as the companies had suggested. Moreover, there are wide annual variations in the natural cycles related to these attributes which, in turn, make it difficult to predict 'safe' periods — such as the late fall or early winter — for conducting seismic activity in any given year. Consequently, it is their contention that the two regions containing the three known nursery areas should be considered as one "sensitive area" in which petroleum activities are prohibited.

They also suggest that the shallow, stratified waters and enclosed or semi-enclosed nature of the basins in which the known areas are located may enhance the propagation of sound in ways which could, in turn, exacerbate the adverse effects of seismic operations. Cornelius Hayward and provided evidence to demonstrate that, from an acoustical perspective, shallow waters in an enclosed basin such as the Gulf are an advantage because the propagation of sound waves tends down in shallow water and the sound is absorbed by the sea bottom more effectively than in deeper waters. The belief that the sound reverberates from the shoreline they argued, was erroneous.

Fish and Invertebrates

Behavioural Effects. None of the participants disputed the arguments that fish react to the discharge of air guns. Information was presented by parties on both sides of the issue to demonstrate that the nature of these reactions, or lack thereof, has been studied and that they vary widely between species and between developmental stages within species. But there was a wide gap in the interpretation of the significance of these effects to the maintenance of robust fish stocks within a healthy ecosystem. Those opposed to seismic activity relied heavily on arguments that there were simply too many unanswered questions about a variety of risks and not enough accurate scientific information to address them with any degree of certainty. Those promoting limited seismic surveys relied heavily on experience about impacts elsewhere in the world as well as the results of scientific literature and upon more general observations of animal behaviour such as the ever-rising biological urges to feed, breed and migrate to demonstrate how adverse effects would be minimal.

Most participants agreed seismic activity over breeding fish stocks presented an unacceptable risk. Opponents of seismic activity pointed out that vocal communications are an important component in the breeding process of many fish species and the potential for airgun sounds to disrupt such communications was seen to be high.

They also argued that seismic activity constituted an unacceptable risk to migrating fish as well. They presented arguments to support the proposition that fish migrating along the western coast of Cape Breton and the Sydney Bight were particularly susceptible to disturbances during the late autumn and early winter when the companies want to conduct their surveys. During this period, large numbers of various commercial fish species move along a narrow pathway between their spawning and feeding grounds in the Gulf of St. Lawrence and their over-wintering grounds in the Sydney Bight.

They contend that behavioural changes in fish species following seismic activities could result in reduced fish catches. The Scotland Fishery Association, which is collecting data to monitor the recovery of cod stocks in Area 4Vn, expressed concern that such changes, temporary as they might be, could interrupt data collection. Kevin Vault of the Scotland group said the Association has collected data on these trends for seven years and feared that the effects of seismic activities on catches could, in turn, adversely affect the interpretation of these time series data.

These opposed to seismic further argued that the hanging, air gun over populations of feeding fish and invertebrates may also have adverse population effects, especially when fish are driven from their feeding sites to often less suitable ones.

Sub-lethal Effects. There was evidence to indicate that seismic activities may sub-lethal effects such as hearing loss, damage to internal organs, particularly seven Guildford, and perhaps even stress. Effects

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habitat/hunting areas. It recommended that Corridor and Hunt avoid running seismic programs within one kilometre of seabird concentrations.

Exploratory Drilling

The Uniaaki Institute of Natural Resources presented evidence which suggested a number of potentially adverse effects from exploratory drilling. These included the clogging of the feeding apparatus in filter-feeding animals by bentonite with consequent death and/or reduction in growth rate, and damage to gills of bivalve molluscs from bentonite with similar effects. The Institute contended that the reduction in growth, together with a lower reproduction rate, might have an effect on benthic communities over substantial areas.

These concerned about exploratory activity argued that the areal extent and environmental effects of discharging drilling mud and cuttings would be greater than Hunt had predicted. The Uniaaki Institute noted that the DFO has developed models to predict the dispersion of water-based muds. These, it suggested, can be used to assist in predicting the potential impact of discharging this material into the marine environment. It noted that this should have been done for the licence areas. Hunt countered that, in a generic sense, it did use the data available from Scotian Shelf studies in its preliminary environmental assessment. Further, it confirmed that dispersion studies would be done for the specific location of any exploratory well site where it might consider drilling in the future.

The Sierra Club noted both known or proposed highly significant seabird protected areas at Margaree Island in the southern Gulf of St. Lawrence and the Bird Islands in the Sydney Bight. Tourist operators use the latter as a point of interest for boat tours. The Sierra Club argued the Nova Scotia Bird Society or the local tourism businesses should have been consulted about the potential impacts of exploration on these bird colonies before the licences were granted.

Environment Canada added that birds are perhaps the most obvious victims of oil pollution and that large numbers of birds can be killed by small amounts of oil. It also advised that certain species, such as the Leach's Storm Petrels, can be attracted to the lights of drilling rigs as well as to the lights of support and seismic vessels. It recommended that Corridor and Hunt monitor the effects of lighting on birds, and devise and implement strategies to mitigate the severity of adverse impacts. In its environmental assessment of the effects of drilling, Hunt argued the effects of lighting would be negligible to minor.

Environmental Hazards

Myles and Associates presented information indicating there are military and industrial ocean dumpsites off the coast of Nova Scotia that have not been assessed for potential hazards to oil and gas exploratory activities. Based on its studies, Myles and Associates has concluded there may be military dumpsites off the coast of Cape Breton containing chemical warfare agents, particularly mustard gas.

In its environmental assessment, Hunt noted it had contacted the Department of National Defence regarding dumpsites in the vicinity of its proposed activities. Two sites were identified, one possibly containing unexploded bombs and the other explosives. Corridor stated it would consult with the Department of National Defence regarding the existence and location of dumpsites prior to executing any seismic surveys, and would not put people or the environment at risk from such hazards.

Myles and Associates also argued there are no documented studies indicating the nature of the potential effects of seismic testing and other exploratory activities on chemical warfare agents in military dumpsites. It recommended governments place a moratorium on all petroleum exploration in the nearshore and offshore areas of Atlantic Canada until such studies are done.

Hunt referenced evidence in its environmental assessment indicating there are no known examples of munitions exploding in situ by any type of disturbance.

Several participants noted that the presence of winter ice would also have a major impact on efforts

to contain and recover any oil or chemical products spilled during drilling operations. Corridor said it would conduct drilling outside the winter season thereby mitigating any problems that ice might pose for oil spill containment and clean-up.

Environment Canada explained that local violent winds known as 'suête' winds could affect exploratory activities in the southern Gulf. It also noted that the potential for encountering waterspouts during the fall should also be addressed when planning exploratory activities for this area. Tropical storms and hurricanes, it advised, could generate storm surges and extreme waves which could be particularly destructive to facilities located in both the southern Gulf and the Sydney Bight regions. Both companies indicated that these matters would be specifically addressed if they planned to drill exploratory wells.

Regional Development

A variety of groups and individuals from industry, the construction and building trades, the business community, boards of trade and development agencies and four of six municipalities offered strong support for proceeding with exploration. They argued that the direct value of exploration is the opportunity that it provides to assess the potential of oil and gas to create a new industrial base for Cape Breton and to contribute generally to the wealth of the province. Without exploration, there can be no development and without development there can be no petroleum industry, and without the petroleum industry there may be no new industrial base for the Cape Breton economy.

Although committed to the importance of gas and oil exploration, supporters of this activity stressed the merit of achieving a diversified economy. They maintained that the ultimate objective is to have strong, sustainable communities. Through the recently established Growth Fund, Enterprise Cape Breton Corporation informed the Commission that it oversees a development policy with five growth sectors of which oil and gas development is one. Sean Reid, a Mulgrave businessman who has experience with offshore gas and oil development, described the hydrocarbon industry as a lever to build the economy without injuring existing economic sectors.

Evidence was presented to illustrate a partial linkage between depressed economic conditions, out-migration of children and poor health indicators such as high rates of cancers and heart disease. Supporters of exploration argued that the opportunity to investigate the potential for an oil and gas industry in Cape Breton must be pursued to determine its potential for alleviating the current economic conditions and the associated negative attributes. Others argued that the economy in rural Cape Breton, which is grounded in the fishery and tourism, is gaining in strength; it is only the area that is traditionally referred to as industrial Cape Breton, that is experiencing economic difficulties. They see exploration as a threat to this stable economic base.

Evidence was presented by both business and trades organizations that there is a well-qualified work force in Cape Breton ready to do the kind of work required by the gas and oil industry particularly during its development phase. The Cape Breton Island Building Trades Council, for example, has a membership of 3,600 skilled tradespeople, many of whom are currently unemployed. As well, there are long-established and developing service industries capable of providing extensive metal fabrication work and a wide range of supply base services to the oil and gas industry.

It was recognized by all who would proceed with gas and oil exploration that tourism and fishery are significant industries which must not be adversely affected by exploration activities. But, important as they are, it was alleged that these industries are not generating sufficient employment to deal with the requirement for jobs among members of the local workforce with the result that other industrial options must be found. Some suggested that science and technology resources are available, here and elsewhere, to ensure that change can be managed in a way that will protect the fishery and tourism along with the broader physical, social and cultural environment. Further, it was suggested that the risk of negative publicity and the consequent damage to corporate reputations alone would serve as a deterrent to any oil and gas company whose policies or practices posed an unnecessary risk to the marine environment.

Without exception, those who favoured proceeding with exploration recognized that measures have to be taken to ensure that co-existence is achieved in a way that allows the fishery and tourism industries to continue with confidence. They acknowledge a process has to be put in place to enable relationships of trust to build within a context where stakeholder voices have equal strength but they offered no model for such a process.

Socio-Economic

All participants accepted and were indeed adamant that the fishery must be protected from any significant adverse effects of petroleum exploration.

The parties opposed to petroleum exploration in general, and seismic in particular, believe experience with oil and gas activities in Nova Scotia demonstrated that the benefits from the exploratory program to the region did not warrant the risk to the fishery. They presented information to demonstrate the high value of the fishery relative to other areas of Canada. Unlike the petroleum exploration industry, they noted the fishery provides local, regional or provincial employment for fishermen, boat-builders, suppliers etc.

Opponents of exploration also noted that seismic vessels represent a hazard to fishing activity by either damaging fixed gear or interfering with fishing patterns. The companies argued that they would, among other strategies, time their activities to avoid such conflicts. Hunt argued that such arrangements had worked well during the inshore exploratory program conducted in Bay St. George, Newfoundland, although the fishing community provided information suggesting that not all fishers there agreed. Hunt noted that this program was similar in size and duration to the one it proposed, and the fishery was also similar to the fishery in the Sydney Bight. The principal difference was that the survey in Bay St. George was closer to shore, sometimes as close as one kilometre, while the survey proposed for Sydney Bight would not be carried out any closer than six kilometres from the shoreline.

Similarly, the fishery presented anecdotal information derived from experience on the Scotian Shelf to argue that the oil industry enforced a much larger exclusion zone around drilling rigs than required by regulation. Its view was that such enlarged zones in the sometimes small and highly productive fishing sites in the southern Gulf of St. Lawrence and Sydney Bight would have a significant impact on some of the fisheries. The Unamaki Institute of Natural Resources argued that even where petroleum companies only enforced exclusion from the regulated zone, fishermen would face increased costs because of the more complicated logistics associated with adapting fishing patterns to a smaller or obstructed fishing area, and of adjusting to the logistics of new fishing patterns.

The nature and distribution of risk was an important issue to many participants. It was generally the view of those opposed to seismic exploration that all of the risk associated with exploration would accrue to the fishing industry and that the petroleum industry would be the recipient of all of the benefits. Moreover, the fishery was being forced to accept the risk to their livelihood involuntarily. It was not an arrangement in which they were free to enter on a voluntary basis.

The stress associated with anxiety about the potential impacts of petroleum exploration on some members of the fishery was seen as a form of "cumulative" effect. Fishermen noted a variety of recent sources of anxiety including adjustments to: the groundfish collapse; the increased costs for licences and new wharf maintenance; regulatory requirements for monitoring fishing activities; the requirement to meet safety regulations; the new provincial legislation which may reduce buyer competition in the lobster market; and seeking ways and means to come to terms with the Marshall decision on Native fishing rights. They argued that they are already burdened with a variety of unresolved social and economic pressures and that they do not have the resources to deal with additional ones at this time.

Participants who expressed concern about exploratory activity argued the socio-economic effects of delaying the exploration for oil and gas would be inconsequential since the oil and gas would be there for use sometime in the future.

This view was not supported, as discussed above, by those advocating exploration. Many pointed to the need for diversification and strengthening of the regional economy to slow-down the current decline and its consequent social implications. Corridor argued a "window of opportunity" currently exists for gas in the North American market. Without exploration, it suggested, there will be no knowledge of the extent and value of oil and gas resources and, without this information, there can be no informed decision making about accessing this opportunity before it may be lost. Further, Hunt warned that Nova Scotia risks losing the opportunity to sustain a viable oil and gas industry in the absence of "timely continuous exploration."

The nature of further consultations, to which most participants were open, was an issue. The fishery and environmental community favoured stakeholder consultations leading to an integrated management plan for the southern Gulf of St. Lawrence and the Sydney Bight regions. In its closing statement, the Gulf Nova Scotia Fisheries Advisory Board advocated a process that engaged all stakeholders, was based on sound science, focused on the identification of valued ecosystems, considered the full range of human activities, considered changing conditions and technologies, addressed cumulative effects and resulted in the streamlining of the regulatory approvals process.

Those supporting exploration favoured an approach to consultations that would focus on resolving specific issues through research and negotiation. They believe there is enough knowledge about the potential effects of exploration to move cautiously forward in these biologically productive and actively fished areas, particularly the Gulf of St. Lawrence. They see advocacy for long term, integrated planning as means to achieve, *de facto*, a moratorium on oil and gas activity.

Mitigative Measures

Corridor and Hunt proposed several methods of mitigating any potential adverse effects of exploratory activities in their environmental and socio-economic assessment, including conducting their seismic surveys in the late fall and winter (previously discussed) and providing compensation for loss of income by the fishery.

The fishing industry argued there were no known effective measures to compensate fishermen for loss of income that could occur if seismic operations reduced fish or invertebrate catches either by altering animal behaviour or by killing significant proportions of particular age classes. Furthermore, such measures would be impossible to develop because of the difficulties associated with identifying damage that might not be evident for several years after the completion of seismic programs.

They also offered anecdotal evidence from other compensation programs on the east coast of Canada to support their contention that the petroleum industry was reluctant to provide compensation, even where damage to fishing gear from seismic operations was clearly demonstrated, without long and protracted legal proceedings.

The fishing industry urged me to recommend to both levels of government that a comprehensive compensation package covering all aspects of exploration, development and abandonment be put in place before any exploration activities are initiated. Such a package should cover not only damage to gear and vessels but also loss of income arising from spills, authorized and unauthorized discharges, and loss of access.

Corridor and Hunt said they are prepared to work with the industry to develop mutually acceptable arrangements for compensating fishers for any loss of income they may incur because of exploratory activity. They noted such arrangements have been successfully established by other oil and gas companies operating on the east coast. Corridor informed the Commissioner that, because of the unique situation of the crab fishery in Areas 18 and 19, it would be prepared to compensate crab fishermen for any loss of access that they might suffer in the event that Corridor applied for, and received approval to drill an exploratory well. In providing compensation for such loss, it said it would follow the principle that fishermen will be left no worse off than if Corridor had not displaced them.

In response to concerns expressed by fishermen, the Canadian Association of Petroleum Producers outlined some of the regulatory requirements for oil and gas companies operating in Canada's offshore regions. Each company must demonstrate it is financially responsible to meet third party claims. In the first instance, it must post a financial instrument with the regulatory authority, usually a letter of credit, in the amount of $30 million which can be accessed by claimants for immediate compensation. It also must demonstrate a further financial capability of $350 million to meet third party claims.

OTHER PERSPECTIVES

Representatives of the First Nations identified a number of issues that were particularly unique to their interests. And Municipal governments, as representatives of the public at large in their respective communities, provided a political perspective on the issues associated with exploration.

The following outlines some of the views and issues related to this point of view.

First Nations

The Commissioner received five submissions from representatives of the First Nations. The principal issues expressed in these submissions were protection of the marine environment and the fishery (discussed above), participation in economic and social benefits, and the status of First Nation rights under the Constitution.

I was reminded of the 1999 Resolution of the Atlantic Policy Congress of First Nation Chiefs demanding stoppage of the process with reference to ("NS 98-2, Parcel 1") the Corridor licence area.

Some presenters criticized the governments' failure to take the lead in protecting the environment from potential damage. They suggested any assessments of potential environmental effects should be conducted by independent scientists, not those hired by the oil and gas industry.

Some presenters also referred to the need to protect potential archeological sites, including burial grounds, that may lie within the area encompassed by the licence areas.

Particular concern was expressed that the oil and gas exploration proposals represented a continuation of the non-native propensity to allow industry, and multi-national corporations in particular, to indiscriminately exploit natural resources for maximum profit at the expense of First Nations.

Municipal Governments

Six municipal units made presentations. Each expressed concern about the need for policies that ensure the long-term viability and sustainability of their economic, social and environmental circumstances, and for safeguards against undue harm to the marine ecosystem.

Four of the municipalities supported the proposals to proceed with exploration activities as an initial measure that, with discovery and subsequent development, would improve revenue streams through increased employment, population growth, and potential for new industrial development as a consequence of a lower-cost source of energy.

Those opposing the exploration proposals claimed that the risk of damaging the marine environment is too great. They were not prepared to endanger well-established products of known value (i.e., fishery and tourism) in favour of an indefinite benefit of searching for another product (i.e., petroleum). For them, acceptable mitigation measures would require less intrusive search technology, economic and social benefits for coastal communities, and more reliable information about the respective exploration proposals.

Those municipalities favouring exploration argued that some risk is necessary and can be reasonably offset by such measures as a proper environmental impact study conducted according to terms that are

acceptable to those who have to live most directly with the risks, by assurances that the agencies responsible for protecting the environment are able to do their job, and by the economic benefits that will accrue to the locality.

POLICY ISSUES

The nature of the regulatory process for granting exploration rights in the Nova Scotia offshore was an underlying concern to many participants throughout the Hearings, and, in some respects, appeared to be the basis for many of the issues that fell within the mandate of the Commissioner. Many groups criticized the present process because lands were tendered without being subject to adequate environmental or socio-economic assessment and without an opportunity for input into the decision-making process by the public, some of whom have legitimate interests in the management of offshore resources. Fishery representatives, for example, felt that coexistence implied a modicum of equality, which they believed they were denied by the current rights issuance process. A number of fishery organizations urged me to inform government authorities at the two senior levels that the current process is inadequate, that it must be changed, and that the change must embody provisions to include the fishery in it at a point before offshore lands are nominated by industry for tendering. To the extent that this issue was discussed at the hearings, none of the participants strongly objected to this position, especially if it made the regulatory process more certain.

The Nova Scotia Petroleum Directorate, in response to participant concerns about the absence of consultation prior to the nomination of offshore lands for exploration, indicated that, under its new Energy Strategy, the provincial government was committed to public consultation before allowing any new lands within 18 km of shore to stand for nomination. In addition, it said it was also committed to improving consultation prior to offering exploration licences in any Nova Scotia offshore area.

Creating a moratorium was a policy issue which was explicitly debated throughout the Hearings. Most environmental and fishery organizations requested that the Commissioner recommend a moratorium be placed on the licence areas either permanently or until research confirms that exploration and development would not have any adverse effects on the marine environment and the traditional uses that it supports. They argued that other countries in the western world had policies that protected nearshore waters from oil and gas activity. They often cited the moratorium on Georges Bank and some argued that this set a precedent for banning petroleum activities from diverse and biologically productive ecosystems. Those supporting exploration argued that there was no reasonable basis for establishing moratoria to protect the fishery. They contended that the fishery and oil and gas industry coexisted in other parts of the western world and that coexistence worked successfully in the nearshore waters of western Newfoundland. Representatives of the oil and gas industry suggested that moratoria eliminate the opportunity to create forums for addressing environmental and socio-economic issues and diverts financial resources for supporting research from this part of the country to other parts.

I was informed that the Mi'kmaq have constitutional status giving them aboriginal title to lands that include the three licence areas thereby requiring the federal and provincial governments to consult with the Mi'kmaq people before granting licences in connection with those areas. The Commissioner was requested to ". . . recommend early and full consultation by the Crowns as well as the private developers with the Mi'kmaq."

A number of interest groups argued that the CNSOPB has the conflicting, and therefore unacceptable, role of acting as both promoter and regulator of offshore oil and gas activities in the sense that it is responsible for both issuing rights to oil and gas operators and for administering environmental, health and safety practices. Moreover, they suggested, the CNSOPB had demonstrated, particularly through its role in the management of environmental and socio-economic issues associated with these licence areas, that it does not have the capability to effectively address the concerns of those representing other marine interests. The oil and gas industry contended that the CNSOPB has the authority and the responsibility to deal effectively with environmental issues through both its own expertise and those of external agencies with which it coordinates its activities. The fishing industry, on the other hand, suggested

that the DFO, and not the CNSOPB, has the regulatory authority, the responsibility and the expertise to coordinate matters related to the protection of the marine environment.

Representatives from both Prince Edward Island and New Brunswick expressed concern that the Public Review Commission was not given a wider geographic scope to permit it to hold hearings in more communities in PEI and NB.

OIL AND GAS DEVELOPMENT

Many groups and individuals argued that successful exploration by Corridor and/or Hunt would open up the entire inshore region to more exploration which, in turn, could lead to widespread development and consequent environmental degradation and conflicts with fishing activities. Accordingly, they believed that this scenario could only be prevented by declaring a moratorium on exploration for the entire area. Other interests argued that the current regulatory process, which they believed would be augmented in the near future by the incorporation of the provisions of the Canadian Environmental Assessment Act, will ensure that each and every oil and gas activity proposed by industry will be subject to a thorough environmental assessment before any approvals are granted, thereby ensuring the protection of the environment and the fishery.

Many groups, particularly the business community, the building trades, boards of trade, academics, the majority of participating municipalities and the oil and gas industry believed that oil and gas development would be a major boost to the regional economy, particularly industrial Cape Breton. This was countered by others from the environmental and fishing sectors who argued that: the benefits to the community would be small and short term compared to the long term benefits from the fishing community and tourism; the major benefits would go to the oil and gas industry; the resources of the marine environment and traditional resource based industries that depended upon them would face unacceptable risks; and the health of the residents of coastal communities, particularly from pollutants associated with flaring, would be put at risk.

The Save our Seas and Shores Coalition advocated that a full-cost accounting analysis embracing the integrated measurement of social and environmental indicators in addition to traditional economic ones should be made for the proposed activities on the licence areas. The basis for this holistic assessment includes consideration of not only ". . . seismic testing and exploratory drilling, but would have to address the true costs and benefits of all stages of petroleum activity: exploration, development, production and decommissioning." Others argued that such an analysis was impossible without first acquiring information about the extent and nature of oil and gas resources on the licence areas.

CONCLUSIONS AND RECOMMENDATIONS

In order to make a decision about what ought to be done about the proposals to conduct exploration, the Ministers will want to have reasonable certainty about the nature of the impacts that seismic surveys and exploratory drilling may incur on the environment and its dependent uses. The basis of that decision has to be clear not only for themselves but to be understood by the public.

Confronting Uncertainty

Yes. No. Yes, with limitations. Those are the alternatives open to those who will decide on the question of whether to proceed with exploration and drilling in the Sydney Bight and southwestern Gulf of St. Lawrence regions. The final decision, of course, rests with the Ministers and the CNSOPB.

During the Hearings, I heard a gamut of views favouring one or the other of those alternatives. I heard, for example, that the scientific evidence showed exploration and drilling could be carried out with minor or negligible impact on the fishery and marine ecology, and therefore should be allowed to go forward. But I also heard equally ardent arguments that there is not nearly enough scientific evidence on which to make judgments so those activities should not be allowed to go forward at all. Such dramatically divergent views may be helpful in offering different lenses through which to look at the central question, but taken together, they are inconclusive and offer only a message of uncertainty.

There was much discussion at the hearings about what is known as the "precautionary principle," the notion that it is always "better to be safe than sorry." But there were many interpretations of its meaning, and these variations were more likely to interfere with, rather than to promote, constructive dialogue. Many participants, from all interests represented at the Review, seemed more comfortable using the traditional concept of "reasonable certainty" when attempting to identify the type of certainty they felt was an acceptable basis for decision making purposes. I believe this reasonable certainty approach — by which I mean the kind of certainty that one attempts to achieve by taking all possible precaution to avoid error, including consultations with other interests and knowledgeable parties — is the more reasonable approach, and the one I have used in drawing conclusions and making recommendations.

What then can the Ministers conclude from the message of uncertainty that comes from the Hearings? Well, for starters, there was widespread agreement on many matters (see Appendix VIII). This report outlined where people are on the issues and how they related to each other about them. And there is information about the fundamental areas of disagreement. These are the points of uncertainty and are the basis for next steps.

These points of uncertainty suggest there may be gaps in scientific knowledge. To use an example, the scientific knowledge is not clear about whether the effect of seismic testing is greater or less in shallow waters. Many such questions are surrounded by arguments about the quality of the underlying science, about its ability to predict effects generally, about its appropriateness to predict effects in the southern Gulf and Sydney Bight areas, and about how the needed knowledge should be gotten – for example, through the laboratory or by monitoring what happens in the "real life" situation. These are matters for examination among qualified people who together would have a fairly complete overview of the science and experience that are at the base of these uncertainties.

- *There is need for expert examination of the science and experience that is at the root of the remaining uncertainty.*

"Getting the science together" can be a reasonably short-term task. Considerable work has already been done. DFO, for example, has reviewed the science as it relates to the marine environment of the southern Gulf and Sydney Bight regions but has yet to assess the significance of its review for addressing the issues raised by the exploration proposals. Hunt and Corridor have considered the DFO review, along with general scientific literature and worldwide experience and applied it as the basis for evaluating

the potential impacts of their proposed activities on the marine environment. They have also said they will update their plans as a result of some additional information received at the Hearings.

- *The proponents need to update their exploration plan, with particular emphasis on addressing some of the uncertainty which underlies the issues including ways and means to resolve them.*

When the science is assessed in relation to the updated plans, then the decision can be taken about whether more research has to be done. These steps need not take long, but come before a decision about whether to proceed with exploration activities.

In the absence of any rigorous examination of the nature of the current regulatory process during the Review, I am assuming that this assessment of what is known, including attention to the information gaps identified by DFO, can be done within the framework of the existing regulatory process. The CNSOPB approves each activity of licence holders only after an assessment of the proponent's documentation relating to environmental impact and environmental protection. In the case of Hunt and Corridor, it is essential to undertake a critical technical review of their updated environmental and socio-economic assessments.

- *In light of issues raised during the Public Review, the CNSOPB should pay particular attention to:*
  - *The fact that commercially important fisheries, such as snow crab, or fisheries in which the stocks are nearly depleted, are based in close proximity to the proposed exploratory programs*
  - *The fact that munitions dumps are located within some of the licence areas. The CNSOPB should request a full report of their characteristics from the Department of National Defense in order to evaluate their potential impacts.*

Establishing Relationships

In order to ensure that future decisions are reached with as much objectivity as possible, it is critical that the technical review process be open and transparent. In the final analysis it is necessary to achieve consensus about the scientific and experiential evidence being used to reach conclusions about impacts. The Review process of the CNSOPB as stated in January 2001 in fact "recognizes the need for balance among interested parties." As noted in the Background section of this report, I was encouraged by the growing rapport and mutual respect I noticed among the various participants during the public hearing process.

- *The strongly motivated participants having developed a high level of understanding of the issues during the Review process constitutes an important consultative resource for the next stage of the regulatory process.*

When the federal and provincial Ministers instructed the CNSOPB to conduct a public review of the Hunt and Corridor proposals prior to approving any programs associated with them, they were, in part, seeking public participation and engagement. That goal has been achieved.

- *The Ministers now have a responsibility to take advantage of gains made by the various interest groups as a result of the investment those groups made in the Review process.*
- *On the basis of participants' interactions during the hearings, enhanced relationships among interest groups such as the fishing and petroleum industries, the building trades, environmental groups, all levels of government, and business interests can champion a range of specific matters which require particular attention whether through investigation, coordination, co-operation or regulation.*

The specific issues and concerns that are likely to benefit from these forms of attention have been reported. Included among them are:

- getting attention for information needed to provide assurances about the nature of the impacts of oil and gas exploration on the socio-economic and natural environments

- getting assurances about dealing with any adverse effects of exploratory activities
- getting assurances about compensation programs for other users of the marine environment
- getting attention for the fishing industry from policy makers who make decisions regarding the gas and oil industry
- recognizing that the exploration phase yields few socio-economic benefits but is a necessary first step without which the opportunity for benefits will be lost in the short term — and perhaps in the long term as well
- capturing opportunities for the fishing and oil and gas industries to work collaboratively on concrete concerns affecting their respective activities.

Marine Resource

The position put forward in the DFO's Habitat Status Report with respect to the interrelatedness of the southern Gulf and Sydney Bight areas is compelling.

- *The southern Gulf and Sydney Bight area should be treated as one for impact assessment purposes. Any assessment of potential effects of exploratory activity in either area should take into consideration potential effects, if any, in the other area.*

This conclusion is not intended to tie decisions regarding potential approvals for exploration activities in one area to like-minded decisions in the other area. Rather, it is to encourage recognition that what happens in one area may have implications for the other area and that these must be addressed.

I believe that suggestions presented to the hearings concerning the desirability of establishing major systems to protect the fishery through such mechanisms as Marine Protected Areas and Integrated Management Plans are important and necessary initiatives. However, I don't believe that they are appropriate mechanisms for addressing the issue at hand. Integrated planning by its very nature is a highly generalized activity. It encompasses a broad range of marine uses. The task with respect to gas and oil exploration is to address a specific resource. Similarly, it is inappropriate to begin a problem solving exercise with assumptions about the type of solutions required. It prejudges the results of the analytical phase of problem solving.

- *Mechanisms such as Marine Protected Areas and Integrated Management Plans should not detract from the requirement for planning to be problem centered, and for the method of problem solving to be rooted in an analytical process and not in preconceived ideas.*

The current issue created by the proposals to undertake exploratory activity on the licence areas is a clearly defined problem that is capable of driving such a process.

Beyond the Terms of Reference

In the Findings' External Issues section, I noted several issues that were outside the Terms of Reference. I make no conclusions in connection with these. Being beyond the Commissioner's mandate, they are not open to comment. However, I feel it is appropriate to include them because, by addressing them, the Ministers will strengthen the framework within which they make their decision about information gained through the technical review process outlined above.

Two of these issues are particularly important to resolve if the conclusions I outlined above are to be helpful. They are presented here as advice to be brought to the attention of persons in a position to choose whether to act on them.

(1) Rights Issuance was a central, if not dominant, factor in many of the issues brought before the Commissioner.

- *I advise government agencies, particularly the CNSOPB, to establish effective arrangements to keep*

fishery interests informed, particularly about impending actions associated with rights issuance.

This advice is in keeping with Nova Scotia's Energy Strategy which provides for public consultation before allowing any new lands within 50km of the shoreline to be used for exploration.

(3) First Nations. In view of their constitutional status, the Mi'kmaq argued they have aboriginal title to the three licence areas, thereby requiring the federal and provincial governments to consult with the Mi'kmaq people before granting licences in connection with these areas.

- *I advise early and full consultation by the Crowns, as well as the private developers, to pursue the implications of aboriginal title with the Mi'kmaq.*

RECOMMENDATIONS

This report provides a summary of the views of the public and my findings on the effects of potential Activities. In that respect, the Report has already fulfilled the requirements set forth in the Terms of Reference. The Hearings were successful in engaging the public and in gathering a good review of the issues and concerns. There was no expectation to include recommendations. It is not part of my mandate to advise whether the proposed exploration and drilling activities should proceed.

I am mindful of these limitations but I believe it may be useful to offer the following two recommendations as a way to bring together the conclusions presented above.

In view of many valid concerns raised at the Hearings about uncertainty regarding the effects of the proposed exploratory activities, and, in view of the DFO references in its Halifax Status Report to many knowledge gaps with respect to the nature of the marine environment, particularly about commercial fish and shellfish in the southern Gulf of St. Lawrence, and in view of the need to examine the science and experience that is at the root of these uncertainties, I recommend:

- *that the necessary scientific, technical and experiential resources be convened to assess the existing base of knowledge in relation to the DFO science, the Hunt and Corridor updated proposals, and the Public Review Commission's Findings.*

I recognize that the process begun by the Ministers to engage the public in discussions about the proposed exploration activities increased the level of engagement during the hearings. That commitment will likely continue if steps are taken to build upon the level of public knowledge of the proposed activities, and to continue to foster the level of constructive involvement. Postponing a conclusion to this process, which has engaged the energy and goodwill of so many, would be both unjust and inefficient. It would be a regressive step. Therefore, I recommend:

- *that the Ministers and the CNSOPB broaden the consultative system to apply to the next steps of the decision making process for the three Licence Areas, to include a cross-section of interests for the purpose of gaining advice about whether or not the proposed activities should proceed, and the specific measures to be taken in the event their decision is to proceed with exploration and drilling activities.*

The system proposed here would include terms of reference for a working group comprised of not more than nine persons, each of whom participated in the Public Review.

I recognize that the next stage of the regulatory process includes an assessment of the scientific, technical and experiential information provided by Hunt and Corridor and a technical assessment of how that information was applied to evaluate potential impacts of their proposed activities. It will be an important determinant for those who decide whether exploration will proceed.

I also recognize that the various stakeholders have just shared in a review of the issues that matter to their respective constituencies and have, in the process, established a rapport for addressing areas of disagreement.

With this background they are in a strong position to have representatives who will work together in an interactive manner to provide advice during the next technical assessment stage of the regulatory process.

The working group would include one representative each from the federal government, the provincial government, the municipal and First Nations governments, two representatives from fishery organizations, and one representative each from environmental, business and trade union organizations. These respective interests would be invited to name their representatives.

The life span of the working group would be limited to the time required to complete the next stage of the regulatory process.

Link to Appendix on next page

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1. [illegible]

As soon as granting public interest is at risk and as a replacement effective [illegible] No. Federal Ministry of Finance Economics Affairs and No. Government Ministry Responsible for No. Ministries Departments and Provincial Administrations (1) "Ministries" [illegible] shall ensure to No. Beneficiaries Grantee. By 2020 to conduct [illegible] Public Service as No. effect of [illegible] of and Living Standards Index [illegible] 2020 and 2021 No. Public Service, undertake comment as a review of: a) No. Provide Work; Assets to undertake a; of case of any Replacement and Living Standards to Rivers areas.

Subject to No. registration of Rivers Terms of Reference and No. Provide Work No. Commissioner of [illegible] Public Service as No. effect of [illegible] of and Living Standards and No. Income Work Living Standards:

a) Socio-Economic Impact:

i) Any impact as soon as No. income of No. families or environment, and a No. actions of children living, industry, income, activity, at income Unemployment.

ii) Any specific substantial business of employment impact and single No. opposed.

iii) No value of information gained to impact of economic assessment.

b) Effects on No. Ecosystem:

i) No effects of Replacement and Living Standards, including, any [illegible] of [illegible] discharges on habitat, aquatic, community, marine mammals, as a turtles, cetaceans, eggs and larvae, accumulation, exposure and benthic [illegible] communities, in No. Income Work.

ii) Proposed Project in No. Address of Fish and effect marine species No. Income Work and No. significance of staff Project, like in No. provision and [illegible] of Living Age, Coastal traffic, and access from of Replacement and Living Standards.

c) Mitigation of Impact:

No. potential for mitigation of identified adverse impacts, including, coastal, hearing, and geographic [illegible] as to Replacement and Living Standards, either No. Income Work.

b. Scope.

The scope of this section is to include the various identified Issues. Subject to Council direction, issues identified in the Public Review process will be addressed in this section. Additionally, Council may identify issues that are not identified in the Public Review process that should be addressed in this section. Any issues identified by the Council that are not identified in the Public Review process may require additional public review.

c. Limitations.

The Commission's analysis should not include an examination of specific language of any ordinance, resolution, or regulation. Rather, the Commission should focus on the broad issues identified in the Public Review process. The Commission should not provide specific recommendations to the Council, but should suggest areas that may require additional study.

d. Public Participation.

The Commission should conduct the Public Review process in accordance with the procedures established by the Council.

e. Conduct of the Public Review.

The Procedures for public meetings established by the Commission should be followed. Additionally, the Procedures described in Section [redacted] shall be followed.

f. Components of the Public Review.

(1) Approach.

The Commission should conduct the Public Review in an open, fair, and objective manner. The Commission should not limit its review to any particular issue or group of issues. The Commission should not prejudge any issue. The process should focus on the identification of issues.

(2) Identification of Issues; Information Meetings.

The Commission should identify issues for public review and comment. Meetings should be held in the public meetings as often as necessary. The Commission should determine the appropriate number of meetings. The identification of issues should not be limited to the Commission's own ideas.

(a) A notice for general public review and comment period should be published in the Public Review process and provided to the general public and interested parties. This notice should be published in accordance with the Commission.

(b) A general public review and comment period should be held. A public review process should be established for the Commission's meetings.

(c) A final list of the general public and interested parties to whom notice should be sent to the Commission's Secretary should be established in the Public Review process.

The identification of issues should be the first step in the general public and interested parties. The meetings should be held in accordance with the Commission. Additional notice should be given to interested parties.

c) Public Meetings

The Commissioner shall conduct public meetings to provide the general public and interested parties with an opportunity to make presentations, submit documents and express their views and opinions.

The public meetings will be held in appropriate locations to be determined by the Commissioner. Consideration will be given to communities most likely affected.

d) Documents and Reports

The Commissioner will collect and make available, to the general public and interested parties, relevant scientific and technical studies and other reports and documents, with the assistance of the Secretariat.

e) Public Notice

i. The Commissioner will schedule and announce the identification of issues/information meetings at least thirty (30) days in advance.

ii. The Commissioner will schedule and announce the start of the public meetings once the Commissioner is satisfied that the identification of issues/information meetings have identified all relevant issues. A minimum of thirty (30) days notice will be provided prior to the start of the public meetings.

iii. The final Terms of Reference and Procedures for the public meetings will be published at least thirty (30) days before the public meetings are scheduled to begin.

8. Secretariat

The Commissioner shall identify and retain the services of support staff, independent specialists or professionals whose functions will include, but not be limited to, assisting the Commissioner in obtaining and interpreting information relevant to the Public Review. The names of any such persons retained by the Commissioner will be made public. Specialists hired by the Commissioner may be requested to appear before the Commissioner during the public meetings. Other support services may also be obtained with respect to any logistical and administrative functions, which need to be performed.

Rates of compensation for support staff shall not exceed provincial guidelines. All expenses will be subject to audit.

9. Costs

The costs of this Public Review, including the remuneration of the Commissioner, the Secretariat, independent specialists, and other support services shall be borne by the Governments of Canada and Nova Scotia.

A budget for the Public Review will be developed by the Commissioner, in consultation with the Board. Any required expenditures, in excess of the approved budget, must receive Board approval.

10. Consultation by Commissioner with Board

The Commissioner, the Secretariat, or both may consult the Board for the purposes of clarifying any administrative matters respecting the Terms of Reference for the Public Review. In no event shall

the Commissioner or Secretariat consult the Board or any Participant for the purposes of discussing any substantive matter or merits respecting the Public Review.

10. Reporting

The Commissioner will prepare and submit to the Board and the Ministers a report on the results of the Public Review, including a summary of the views of the general public and interested parties, and the Commissioner's findings on the effects of potential oil and gas Exploration and Drilling Activities within the Licence Areas, having particular regard to the matters in Clause 2 a), b) and c) of these Terms of Reference.

The Commissioner will report to the Board and the Ministers by March 29, 2002.

11. Powers of the Commissioner

Pursuant to Section 44(3) of the Accord Acts, the Board will request that the governments confer on the Commissioner all or any of the powers conferred on persons appointed as Commissioners under the Public Inquiries Act (Nova Scotia) and the Inquiries Act (Federal).

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In September and October 2001 the Public Review Commission visited eight communities in the region and heard comments and concerns from nearly 200 people. The following is a list of communities visited:

Tuesday, September 25, 2001	Port Hawkesbury
Wednesday, September 26, 2001	Inverness
Thursday, September 27, 2001	Cheticamp
Friday, September 28, 2001	Antigonish
Saturday, September 29, 2001	Montague, P.E.I.
Tuesday, October 2, 2001	Ingonish
Wednesday, October 3, 2001	Sydney Mines
Thursday, October 4, 2001	Glace Bay

Included in what the Commission heard were:

1. **Concerns about the environment**
    - exploration activity poses little risk to the environment.
    - exploration might harm fish, shellfish and marine mammals.
    - not enough information about near shore areas of the region.
    - more information on long-term effects of seismic and drilling operations.
2. **Concerns about other industries**
    - how would exploration activity affect the important inshore fishery in communities of the licence areas?
    - would drilling activity hurt tourism by spoiling our pristine shorelines?
    - maybe petroleum industry jobs wouldn't stay here.
    - is it worth risking our way of life?
    - if exploration does not go ahead, would we lose our best chance to bring in much-needed new industry?
3. **Concern about insufficient information**
    - review process does not allow enough time to gather all information on the environment and the effects of exploration activities that is needed to make an informed judgement.

1. Public Hearings will be held during the month of January 2002.

2. Anyone wishing to make a presentation at any public meeting must register as a Participant by notifying the Commissioner's office, in writing by **Friday, December 28, 2001**. A Registration Form is available upon request or at www.publicreview.ns.ca.

3. Persons may present their views or information in **written form, orally or both:**

   Written Submission:

   (a) Anyone wishing to register a written submission with the Commissioner's office must do so by filing four (4) copies of the entire submission by the December 28 deadline;

   (b) All written submissions must include: i. name and address of Participant, ii. names of all individuals, groups, organizations, or entities on whose behalf the Participant is acting; iii. name(s) of the person(s) who will present the Participant's submission at the public meeting; iv. complete listing of all studies, reports and other documents used in support of the Participant's submission; vi. particular day when the Participant wishes to make its submission;

   (c) All written submissions received in accordance with paragraph (a) & (b) will be reviewed by the Commissioner and reproduced and made available at the Commissioner's office and at the public meetings.

   Oral Presentation:

   (a) Anyone wishing to register an oral presentation (intention to speak at hearings without formal written submission) must do so by the December 28 deadline in accordance with paragraph 3(b);

   (b) Any oral presentation, which refers to written material, including journal articles, studies, reports or to a written submission, should be limited to highlighting essential features of the material or responding to questions on it during the presentation.

4. The Commissioner will not accept any information following the completion of the public meetings.

5. Persons wishing to make a presentation at any public meeting and who do not register by December 28 may register prior to the start of a public meeting or during intermission. However, the opportunity to present will depend upon the time remaining after the pre-registered Participants have been heard. Further, there will be no opportunity to refer to documents (e.g., research reports, articles), which have not been filed by December 28.

6. A Participant, including any other individual, group, organization, or entity on whose behalf it is acting, will be allowed to make one presentation to the Commissioner per meeting.

7. With the exception of one session in Prince Edward Island, all Hearings will be held at a central location on Cape Breton Island. The central location is intended to ease travel time for persons in communities located near the three licence areas, and should assist continuity of deliberations by reducing repetition required by changing venue. The selected location in Cape Breton is the Wagmatcook Culture and Heritage Centre, Wagmatcook, 10 miles west of the village of Baddeck. The location in Prince Edward Island is the Empress Room of the Rodd Marina Inn and Suites, Montague.

8. At the public information meetings, participants raised concerns re the need for a base of information about what is being proposed by the respective licence-holders (Hunt Oil Company of Canada, Inc. and Corridor Resources Inc.). In response, the Commission is requesting these companies present their submissions first on the schedule of Public Hearings. Each Company is asked to include information on Activities and their assessment of effects, together with supporting information.

Each will be allocated one-half day (i.e., three hours) for their presentation on the first day of the Hearings, January 10, 2002.

9. Subsequent submissions will be allocated one hour for presentation. This includes time for questions and answers. (If additional time is required, a request may be made through the Registration Form). It is anticipated that many registered Participants will require less than an hour e.g., twenty minutes with ten minutes for questions and answers.

   (a) Registrants are asked to indicate on the registration form the amount of time they require;

   (b) Registrants are asked to indicate on the registration form at which session(s) they prefer to make their presentation(s). A schedule of presentations will be sent to registrants by January 7, 2002;

   (c) Hearings will take place on January 10, 11, 15, 16, 17, 18, 21, 22, 23, 28, 29, 30, 31 in Cape Breton and on January 25 in Prince Edward Island. (Note: Flexibility of schedule to be determined by demand.);

   (d) Participants will have an opportunity to ask for clarification of, response to, any information submitted in writing and/or orally to the Commission. Days following presentation of formal submissions may be allocated for this purpose.

10. A day will be allocated as opportunity for Participants who engaged in the Hearing process to make a final statement of not more than 10 minutes each.

11. Summarizing views will not refer to any documentation (e.g. research results, article,) that has not been filed by December 28, 2001.

12. Documentation not filed by December 28, 2001 is unacceptable, except when specifically requested by the Commissioners.

13. It is important to note that the mandate of the Commissioner specifically excludes all matters that go beyond consideration of the effects of potential oil and gas Exploration and Drilling Activities within the Licence Areas. As a consequence, matters related to petroleum development and production is beyond the scope of the Public Review.

PRESENTATIONS

Thursday, January 16, 003

Chris Wickens	Husky Oil Company of Canada
Glen Miller	Husky Oil Company of Canada
Scott Bokeloh	Husky Oil Company of Canada
Sherval Collins	Husky Oil Company of Canada
David Fitt	Husky Oil Company of Canada
Jy Ross	Husky Oil Company of Canada
Norman Miller	Corridor Resources Inc.
Paul Darling	Corridor Resources Inc.
Dr. Rolf Davis	Corridor Resources Inc.
Shawn Dimmell	Corridor Resources Inc.

Friday, January 17, 003

Elizabeth May	Sierra Club of Canada
Neil Livingston	On behalf of Dr. Chris Clark
Dr. Jean Savoiedt	On behalf of Dr. Chris Clark
Neil Livingston	Black River Productions
Anita MacLeod	
Debby Walsh	Canadian Association of Petroleum Producers
Anson & Robert Sobonsky	
Laura London & Linda Pannozzo	
Dennis MacIsaac	
Norman Devoe	Inverness North Fishermen's Association
Percy Hayne	Inverness North Fishermen's Association
Sam Ellsworth	Inverness North Fishermen's Association

Tuesday, January 21, 003

Paul Reiser	Department of Fisheries and Oceans
Jim Jones	Department of Fisheries and Oceans
Neil Bellefontaine	Department of Fisheries and Oceans
Michael Chadwick	Department of Fisheries and Oceans
Neil Livingston	Black River Productions
Fred Kennedy	Area H Cook Fishermen's Association
Bill MacDonald	Area H Cook Fishermen's Association
Dan MacDougall	Area H Cook Fishermen's Association
Kevin Stark	PEI Scottish Fishery Association
Corinne Lane	
Wayne Potter	

Wednesday January 4th 2006

Dave Lincoln	Prince Edward Council
John May	
Neil Livingstone	
Mary Gannon	Prince Rupert Board Commissioner Victoria Group
Nancy Hagen	
Ina Loffler	Maritime Fishermen's Union Local 11
Fred Kennedy	Area 18 Gulf Fishermen's Association
JP Morris	Area 18 Gulf Fishermen's Association
Sam Dawson	Gulf N.S. Fisheries Advisory Board
	N.S. Fisheries Management Board

Thursday January 5th 2006

Steve Hammond	Prince Edward Council
Dr. Fred Wheatley	Atlantic Salmon Federation
Fred Kennedy	Western Cape Breton Scott Gulf Fishermen
Brian Adams	Western Cape Breton Scott Gulf Fishermen
Ronnie Doucet	Western Cape Breton Scott Gulf Fishermen
Cyril Burns	Western Cape Breton Scott Gulf Fishermen
Jill Bonnemaire	Maritime Fishermen's Union Local 11
Kelly Fitzgerald	Maritime Fishermen's Union Local 11
Veronika Krecik	
Merrill MacInnis	Area 21 Scott Gulf Fishermen
Dennis Smith	Little River Fishermen's Association
Jim Templeton	
Sam Dawson	Gulf N.S. Fisheries Advisory Board
	N.S. Fisheries Management Board

Friday January 6th 2006

James Vega	Prince Edward Council
Ronald Coleman	DFO Atlantic
Peter Redfox Jr.	MMF Centre for Fisheries and Oceans
Laura MacKnee	University College of Cape Breton
Tanya Wimmer	
Tanya Wimmer	Mi'kmaq of Nova Scotia N.S. Confederacy Tuna Working Group
Howard Epstein	NDP Caucus Prince Rupert Legislature
John Noble	NDP Caucus Prince Rupert Legislature
Dan Turner	Brunswick of St. John's Halifax

Monday, January 6, 2025

Joe MacLean	Municipality of the County of Inverness
Daniel Bradshaw	Municipality of the County of Inverness
Dawn Coffman	Municipality of the County of Inverness
Neil MacDonald	Municipality of the County of Inverness
Stuart MacAulay	Municipality of the County of Inverness
Eli MacMaster	
Albert Muirhead	
Gerald Thompson	Municipality of Victoria County
Ron MacDonald	Municipality of Victoria County
Daniel Bradshaw	
John Maclellan	
Myles Arthur	Mayor of Antigonish
Scott Arthur	Mayor of Antigonish
Michael Ogilvie	Mayor of Antigonish
Steve Farrell	Committee Energy Corporation
Colin MacKinnon	Board of Canso Regional Corporation Ltd.
Lee Lugosch	Vice-President for Joe MacDonald of Stantec Division
Ron Houghton	Gold Key Bus Training/Bank
Steve Hayes	Gold Key Bus Training/Bank
Joe MacDonald	Gold Key Bus Training/Bank
Shannon Stevens	Gold Key Bus Training/Bank
Reg MacDonald	Maritime Drilling/Diesel

Tuesday, January 7, 2025

Michael Heffernan	Maritime Fishermen's Union
Lucas Bastarp	St. FX University - Agenda Resource Group
Holly MacPherson	St. FX University - Agenda Resource Group
Hailey Webb	St. FX University - Agenda Resource Group
Madeline MacMullin	
Richard Cohen	Municipality of the County of Richmond
Steve MacNeil	Municipality of the County of Richmond
Mark Butler	Ecology Action Centre
Mark Butler	Ms Hallett of Stantec/Atlantic Strategy Inc. Consulting Inc.
Louise Tyrrell	Stantec Consultants
Mia Cunningham	

Wednesday, January 15, 2003

Mick Green	Ecology Action Centre
Bob Morgan	Industrial Cape Breton Board of Trade Petroleum Comm.
Dr. Keith Brown	University College of Cape Breton
Osborne Burke	North of Smoky Fishermen's Association
Clancy MacKinnon	North of Smoky Fishermen's Association
Kevin Keaton	Mining Society of Nova Scotia
Robert McCharles	Dillon Consulting
Arvia Ehrkott & Alastair MacLeod	N.S. Chambers of Commerce & Industrial Cape Breton Board of Trade
David Rambeau	North of Smoky Fishermen's Association
Derek Wells	Guild N.S. Fisheries Advisory Board & 4Vn Fisheries Management Board
Sam Elsworth	Guild N.S. Fisheries Advisory Board & 4Vn Fisheries Management Board
Kay Wallace	Guild of N.S. Banstead Fishermen's Association

Friday, January 17, 2003

Wayne Easter	Member of Parliament
François Beaudin	L'Union des Pecheurs des Maritimes Local 1 Nord-Est du Nouveau Brunswick
Ron Cormier	L'Union des Pecheurs des Maritimes
Guy Cormier	L'Union des Pecheurs des Maritimes Local 2 Sud-Est du Nouveau Brunswick
Louis Scofield	L'Union des Pecheurs des Maritimes
Inka Milewski	Conservation Council of New Brunswick
Dr. Irene Novaczek	Earth Action P.E.I.
Ken Campbell	P.E.I. Fishermen's Association
Terry Carter	P.E.I. Fishermen's Association
Mike MacDonald	P.E.I. Fishermen's Association
Kevin Robertson	P.E.I. Fishermen's Association
Roger Davies	Saint Mary's University
Tom Roddin	
Toni Brook	Southeast Environmental Association

Monday, January 28, 2002

Paul Taylor	Nova Scotia Petroleum Directorate
Sandy MacMullin	Nova Scotia Petroleum Directorate
Bruce Cameron	Nova Scotia Petroleum Directorate
Blaine MacDonald	Cape Breton Island Building & Construction Trades Council
Gerry Shannahan	Cape Breton Island Building & Construction Trades Council
Lawrence Sheehi	Cape Breton Island Building & Construction Trades Council
Jack Aitkens	Margaree Salmon Association
Billy Joe MacLean	Town of Port Hawkesbury
John Boyd	Guif N.S. Beatalide Fishermen's Association
Carter Stevens	Industrial Cape Breton Board of Trade Petroleum Comm.
Elaney MacInnis	
Jason Harris	
Trevor Knockington	Unamaki Institute of Natural Resources & Union of Nova Scotia Indians
John Parker	Antigonish Regional Development Authority
Ian MacDonald	Inverness South Fishermen's Association

Tuesday, January 29, 2002

Sandy Benoit	
Arthur Graham	
Katrinia MacDonald	Port Hood and Area Development Society
Victoria Cate May Barton	
Carl Baillie	Municipal Group of Companies
Dave MacKenna	Municipal Group of Companies
Wilf Isaac	Northside Fishermen's Association
Dennis Cox	
John Woods	Electricity Consumers Alliance of N.S.
Bruno Marcocchio	
Mary Ruth MacLellan	
Gordon MacDonald	Guysborough County Regional Development Authority
Bill Connolly	Guysborough County Regional Development Authority
Allister Marshall	Pictou Fish & Wildlife Association
Marc Leclerc	Tenma

Wednesday, January 30, 2002

Allister MacDonald	Municipality of Pictou County
Ken Montgomery	Enterprise Cape Breton Corporation
D.A. Landry	Enterprise Cape Breton Corporation
Joe Armishaw	Enterprise Cape Breton Corporation
Holly Palen	
Caroline Cameron	
Bruce Wildsmith	Union of Nova Scotia Indians
Chuck Nicholson	
Eric Hundert	Environment Canada
Andre Gauthier	Environment Canada
Sean Reid	Mulgrave Machine Works
Kenneth MacKinnon	Cape North Development Ltd.
Bert Lewis	Nova Scotia Community College - Strait Area Campus
Dave MacLean	Nova Scotia Community College - Marconi Campus

Thursday, January 31, 2002

Cliff Murphy	U.A. Local 682 Plumbers and Pipe Fitters
Melvin Gillis	U.A. Local 682 Plumbers and Pipe Fitters
Ron Evas	U.A. Local 682 Plumbers and Pipe Fitters
Ken MacKillop	U.A. Local 682 Plumbers and Pipe Fitters
Dr. Slawa Lamont	University College of Cape Breton
Gary Collins	
Mayor John Morgan	Cape Breton Regional Municipality
Greg Egilson	Gulf N.S. Herring Federation
Gregory MacPherson	Gulf N.S. Bonafide Fishermen's Association
Kim MacDonald	Gulf N.S. Bonafide Fishermen's Association
Colin MacDonald	Gulf N.S. Bonafide Fishermen's Association
John Jacobs	N.S. Office of the Canadian Centre for Policy Alternatives
Paul MacEachern	Offshore Technologies Association of Nova Scotia
Greg Organ	North of Smokey Fishermen's Association
Norval Collins	Hunt Oil Company of Canada
Chris Wickens	Hunt Oil Company of Canada
Glen Miller	Hunt Oil Company of Canada
Mary T. Goodwin	
Cheryl Gallant	Strait Area Chamber of Commerce
Robert Rangeley	World Wildlife Fund
Helen Lofgren	Atlantic Coast Eco Region Task Force of Sierra Club

WRITTEN SUBMISSIONS

Canada-Nova Scotia Offshore Petroleum Board
Justin Huston, Dartmouth

FINAL STATEMENTS

Friday, February 1, 2002

Herman Deveau	For Percy Hayne -Gulf N.S. Fleet Planning Board
Jeff Brownstein	Maritime Fishermen's Union
Derek Wells	Gulf N.S. Fisheries Advisory Board & 4Vn Fisheries Management Board
Alastair MacLeod	Industrial Cape Breton Board of Trade
David MacDougall	Hunt Oil Company of Canada
Myles Kehoe	Myles & Associates
Michael Ojoleck	Myles & Associates
Lucia MacIsaac	University College of Cape Breton
Cheryl Gallant	Strait Area Chamber of Commerce
Fred Kennedy	Western Cape Breton Snow Crab
Bill MacDonald	Western Cape Breton Snow Crab
Norman Miller	Corridor Resources
Dr. Rolf Davis	Corridor Resources
Murdock MacMullin	
Elizabeth May	Sierra Club of Canada
Bob Morgan	Industrial Cape Breton Board of Trade Petroleum Comm.
Cliff Murphy	U.A. Local 682 Plumbers and Pipe Fitters
Chief Terrance Paul	Unamaki Institute of Natural Resources
Arron Schneider	On behalf of Mark Butler -Ecology Action Centre
Mac Campbell	
Leslie MacIntyre	Strait of Canso Superport Corporation
Howie MacIntyre	Maritime Drilling School
Wilf Isaac	Northside Fishermen's Association
	Canadian Assoc. of Petroleum Producers (written statement)

ADDITIONAL WRITTEN REPRESENTATIONS/CORRESPONDENCE

	Canada Nova Scotia Offshore Petroleum Board
	Canadian Association of Petroleum Producers
Corbett, Mary, CND	CRC-A Office of Justice and Peace
Davis, Dr. Anthony	St. Francis Xavier University
Denstedt, Shawn	Bennet Jones
Gunn, Jim	Northeast Highlands Chamber of Commerce
Hasse, Martin R.	Friends of Nature Conservation Society
Hinks, Louis	Atlantic Salmon Federation
Kennedy, Fred	
Lawrence, Frederic B.	ACCESS
Lewis, Lloyd & Donna	
MacDonald, Bill	Area 19 Snow Crab Fishermen's Association
Mahtab, Carol	
McDonald, Crystal	PEI Aquaculture Alliance
Moran, Kate	Atlantic Canada Petroleum Institute
Morgan, Bob & MacIsaac, Lucia	Industrial Cape Breton Board of Trade
O'Brien, Minga	
Peach, Nora Tomlinson	
Penney, Christine	Clearwater
Querques Denett, Lucy	United States Department of the Interior
Ruffman, Alan	Geomarine Associates Ltd.
Scattolon, Faith	Fisheries and Oceans Canada
Scott, Wendy	Nova Scotia Adventure Tourism Association
Shackel, N.	Marine Fisheries Ecologist
Slakov, Jan	Envior-Clare
Stevens, Brian	PEI Seafood Processors Association
Thayer Scott, Jacquelyn	University College of Cape Breton
	Tourism Industry Association of Nova Scotia
Wilcox, John A.	Glace Bay Fisheries Ltd.

4Vn Sentinel Fishery Association**
Antigonish Regional Development Authority**
Area 21 Snow Crab Fishermen**
Area 19 Snow Crab Fishermen's Association*
Area 18 Crab Fishermen's Association*
Argo, Dr. James**
Atlantic Salmon Federation**
Benoit, Sandy***
Black River Productions*
Boudreau, Daniel***
Boyd, John A.**
Brzeski, Veronika**
C.B. Regional Municipality - John Morgan***
C.B. Island Bldg. & Const. Trades Council*
Cameron, Caroline**
Campbell, Mac*
Canada-N.S. Offshore Petroleum Board****
Canadian Association of Petroleum Producers*
Canadian Centre for Policy Alternatives - N.S.*
Collins, Gary***
Conservation Council of New Brunswick***
Corridor Resources Inc.*
Cox, Dennis***
Department of Fisheries and Oceans*
Dillon Consulting***
Earth Action PEI*
Easter, Wayne, MP*
Ecology Action Centre**
Electricity Consumers Alliance of Nova Scotia*
Elsworth, Samuel G.**
Enterprise Cape Breton Corporation*
Environment Canada*
Goodwin, Mary T.**
Gorman, Mary & Hayne, Percy**
GPI Atlantic**
Graham, Arthur***
Green, Mick**
Gulf N.S. Herring Federation**
Gulf N.S. Bonafide Fishermen's Association*
Gulf N.S. Fisheries Advisory Board**
Gulf of N.S. Fleet Planning Board*
Guysborough County RDA***
Harris, Jason**
Hertzman, Owen**
Hunt Oil Company of Canada*
Huston, Justin****
Industrial C.B.Bd.of Trade-Alastair MacLeod**
Industrial C.B.Bd.of Trade -Carter Stevens*
Industrial C.B.Bd.of Trade - Bob Morgan*
Inverness North Fishermen's Association**
Inverness South Fishermen's Association*
Landon, Laura & Pannozzo Linda*
Lapointe, Luc (Ian MacDonald)*
Laurentian Energy Corporation**
LeBlanc, Pat**
Lincoln, David*
Little River Fishermen's Association**
Livingston, Neal***
Lofgren, Helen***
Lunn, Carlton**
MacInnis, John***
MacInnis, Danny**
MacIsaac, Donnie*
MacKinnon, Kenneth R.***
MacLellan, Mary Ruth***
MacLeod, Anita***
MacMaster, Ed***
MacMullin, Murdock***
Marcocchio, Bruno*
Margaree Environmental Association**
Margaree Salmon Association*
Maritime Drilling Schools Limited**
Marshall, Albert***
May, John**
May-Burton, Victoria Cate***
MFU - François Beaudin**
MFU - Guy Cormier**
MFU - Ron Cormier, President**

* Presentation including set of reference material ** Presentation including list of references *** Presentation **** Written Submission

MFU - Jeff Brownstein**
MFU - Michael Belliveau**
Mining Society of Nova Scotia**
Mulgrave Machine Works**
Municipal Group of Companies**
Municipality of the County of Richmond***
Municipality of the County of Inverness***
Municipality of the County of Pictou*
Municipality of the County of Victoria***
Myles and Associates**
N.S. Chambers of Commerce***
N.S. NDP Caucus*
Nicholson, Chuck*
North Bay Fishermen's Cooperative Ltd.*
Northside Fishermen's Association**
Nova Scotia Community College*
Nova Scotia Petroleum Directorate*
Nth.of Smokey Fish. Assoc.- David Rambeau**
Nth.of Smokey Fish. Assoc.-Osborne Burke**
Offshore Technologies Association of N.S**
Organ, Greg*
P.E.I. Fishermen's Assoc.**
Palen, Holly**
Port Hood and Area Development Society**
Potter, Wynne**
Po'tlo'tek Fish & Wildlife Association*
Reddin, Tom***
Rowan Companies**
Scofield, Louis**
Selkowitz Family**
Sierra Club of Canada*
Southeast Environmental Association***
St. Mary's University - Religious Studies**
St. F.X. University - Aq. Resources Group***
Stewards of St. Ann's Harbour Association***
Stoffer, Peter, MP*
Strait Area Chamber of Commerce*
Strait of Canso Superport Corp. Ltd.**
Tesma**
Tompkins, Jim***
Town of Port Hawkesbury***
U.A. Local 682 Plumbers & Pipefitters**
UCCB - Dr. Slawa Lamont***
UCCB - Dr. Keith Brown*
UCCB - Lucia MacIsaac*
Unamaki Inst.Nat.Res.&Union of N.S. Indians**
Union of N.S. Indians - Bruce Wildsmith**
Western Cape Breton Snow Crab Association**
Wimmer, Tonya**
World Wildlife Fund Canada***

* Presentation including set of reference material ** Presentation including list of references *** Presentation **** Written Submission

Magnitude of Impacts

Major Impact

An impact on a VEC (Valued Ecosystem Component) is rated major if it is judged to result in a 10%, or greater, change in the size or health of a population, the carrying capacity of its habitat, a commercial harvest, or in an attribute of another VEC.

Moderate Impact

An impact on a VEC is rated moderate if it is judged to result in a 1% to 10% change in the size or health of a population, the carrying capacity of its habitat, a commercial harvest, or in an attribute of another VEC.

Minor Impact

An impact on a VEC is rated minor if it is judged to result in a less than 1% change in the size or health of the population, the carrying capacity of its habitat, a commercial harvest, or in an attribute of another VEC.

Negligible

Negligible impacts are those that are judged to have essentially no effects.

Scale of Impacts

Regional Impact

A regional impact is an interaction that is judged to have an impact at the regional level.

Local Impact

A local impact is an interaction that is judged to have an impact at the local level.

Duration of Impacts

Long-Term Impacts

Impacts that last for more than five years.

Medium-Term Impacts

Impacts that last for periods of one to five years.

Short-Term Impacts

Impacts that last for a period of less than one year.

Likelihood of Occurrence

The impact definition includes an estimate of the likelihood of an impact occurring.

Significance of Potential Impacts

Not Significant Impact

Impact is negligible or is minor, short-term and local or sub-local in nature.

Significant Impact

Impact rating is major or moderate or that it is minor with a medium or long term and a regional impact.

Appendix VIII
Areas of General Agreement and Disagreement

Agreement	Disagreement
extensive seismic testing has been conducted in the past in the general region where the licence areas are located	
drilling has been conducted in the licence areas in the past	
the fishery in the licence areas is productive	
there will be no petroleum development without exploration	
seismic testing should not be conducted over spawning grounds	
there are many in Cape Breton, and northeastern Nova Scotia generally, who have a legitimate interest in offshore exploration	there is disagreement over the way these interests are to be balanced
seismic will have an effect on marine life	there is disagreement about the significance of the effects
smothering from drill cuttings will kill benthic organisms	there is disagreement about the significance of the effects and mitigative measures
trace elements of heavy metals from drilling waste discharges could bioaccumulate	there is disagreement about the significance of the effects and mitigative measures
certain fisheries, such as crab, are confined by licence or nature to certain areas and loss of access could result in significant temporary loss of certain fisheries	
there are no provisions for loss of fishing access caused by exploratory drilling	
loss of access is not covered in compensation arrangements	
not desirable to remove people from the fishery; unacceptable social costs; compensation for economic losses is unacceptable	
compensation programs to other users of the marine environment are essential, e.g. gear and vessel damage	
it is important to know which areas are open to exploration and which are not	
if exploration on the licence areas were to proceed it will require utmost caution	
monetary benefits to Cape Breton from exploration will not have a significant economic effect at the regional level	
a form of co-existence is acceptable	there is disagreement over the nature of co-existence
	there is disagreement over the method of protection (regulation of use vs. regulation of activity) for "sensitive areas" such as spawning grounds, nursery areas, juvenile habitat, migratory routes, and high fishing activity
	there is a disagreement over the meaning of the precautionary principle

Teresa MacNeil retired in 1996 after nearly forty years at St. Francis Xavier University where she was a Professor of Adult Education and Director of Extension. She holds an undergraduate degree from that university and two graduate degrees from the University of Wisconsin.

Over the years, Dr. MacNeil has participated in a wide range of local, provincial and national organizations, primarily as a volunteer. In Cape Breton , she was – in the 1980s – Chair of the Board of the Cape Breton Development Corporation and Vice Chair of Enterprise Cape Breton; in the 1990s she was Chair of the Board of the Cape Breton Centre for Craft and Design and of the Sydney Steel Corporation. She currently serves on the Board of Nova Scotia's Voluntary Planning, is Chair of the Board of ElderHostel Canada (recently renamed, Routes to Learning Canada), and is a member of the national Advisory Committee to Minister responsible for Canada's Rural Secretariat.

Dr. MacNeil resides in Johnstown, Richmond County.

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